

FlashCalcTM

Reference Guide

Warranty and User Support Information Inside



FlashCalc™
User Support Plan

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This is the **VisiCorp User Support Plan**. It is designed to help you obtain the full benefits of your VisiCorp software product. Please take a moment to thoroughly familiarize yourself with the following few pages, and to complete and return the enclosed Product Registration Form which is key to our services.

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- **Product Replacement Policy and Replacement Order Form**
- **Backup Copy Policy and Backup Order Form**
- **The VisiCorp Customer License Agreement**

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Apple //c, Apple //e, and Apple II Plus, FlashCalc™,
Version No. _____

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FlashCalcTM

**Reference Guide
for the APPLE //c, //e, and II PLUS**

Program by
Nereid Systems, Inc.

Manual by
VisiCorp

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Contents

Using the Reference Guide	xvii
Chapter Summaries	xviii
Finding Information on Commands	xx

Chapter 1 Learning the Fundamentals

Unit 1 Viewing the Status Area of the Screen	1-3
Identifying the Entry, Prompt, and Edit Lines	1-4
How a Worksheet Is Calculated	1-4
How Much Memory Is Used by a Worksheet	1-5
Unit 2 Using the FlashCalc™ Commands	1-7
Unit 3 Overview of the Worksheet	1-8
Defining Rows and Columns	1-8
Unit 4 Moving to Parts of the Worksheet	1-10
Moving to a Nearby Cell	1-10
Moving to a Named Cell	1-10
Moving a Set Distance	1-11
Moving to the First or Last Entry of a Worksheet	1-11
Unit 5 Viewing the Program Version Number	1-12
Unit 6 Exiting the Program	1-13

Chapter 2 Writing and Erasing on a Worksheet

Unit 1 Entering Labels	2-3
Correcting Mistakes	2-5
Unit 2 Entering Values	2-6
Using # to Copy Values	2-7
Accuracy of Values	2-8
Unit 3 Entering Formulas	2-10
Symbols Used in Formulas	2-12
How Formulas Are Calculated	2-13
Specifying Other Cells in a Formula	2-14
Displaying the Result of a Formula	2-15

Unit 4 Drawing Lines on a Worksheet	2-17
How to Use the Repeating Label Command	2-18
Unit 5 Editing an Entry	2-19
How to Use the Edit Command	2-20
Unit 6 Erasing an Entry	2-22
How to Use the Blank Command	2-22

Chapter 3 Making Global Display Changes

Unit 1 Overview of the Global Command	3-3
How to Use the Global Format Command	3-4
How to Use the Global Attribute Command	3-5
Unit 2 Changing Column Widths	3-6
How to Change an Individual Column's Width	3-7
Unit 3 Recalculating in Row or Column Order	3-8
Making Sure That Formulas Compute Correctly	3-9
Forward References	3-9
Circular References	3-11
Unit 4 Using Automatic or Manual Recalculation	3-12
Unit 5 Erasing the Worksheet	3-13
Unit 6 Viewing Two Windows at Once	3-14
How to Use the Window Command	3-15
Unit 7 Keeping Columns or Rows in View	3-18
How to Use the Titles Command	3-19

Chapter 4 Positioning Rows and Columns

Unit 1 Inserting a Blank Row or Column	4-3
How to Use the Insert Command	4-4
Unit 2 Deleting a Row or Column	4-6
How to Use the Delete Command	4-7
Unit 3 Moving a Row or Column	4-9
How to Use the Move Command	4-10
Indicating Where to Move "To"	4-10

Chapter 5 Copying Cell Entries

Unit 1 Overview of the Replicate Command	5-3
Source and Target Ranges	5-4
How to Use the Replicate Command	5-5
Unit 2 Copying Different Sized Areas	5-6
Copying a Single Cell	5-6
Copying a Row or a Column	5-9
Copying a Block of Cells	5-13
Unit 3 Copying Formulas	5-16
How to Choose No Change or Relative	5-16
Unit 4 Copying Selected Characteristics of Cells	5-19
How to Use the Replicate Options	5-19

Chapter 6 Controlling a Cell

Unit 1 Overview of the Rankings of Display Formats	6-3
General Format (Startup)	6-3
Global Format	6-4
Individual Cell Format (Local)	6-4
Choosing between Format, Attribute and Global Commands ...	6-4
The Format Command	6-4
The Attribute Command	6-5
The Global Command	6-5
Unit 2 Using Formats to Change a Cell's Display	6-6
How to Use the Format Command	6-7
Setting the Number of Decimal Places	6-9
Resetting a Cell to the Global Format	6-9
Resetting a Cell to the General Format	6-9
Displaying Values as Rounded Whole Numbers	6-10
Aligning Cell Entries Left, Right or Center	6-10
Left-Aligned Format	6-10
Right-Aligned Format	6-11
Centered Format	6-11
Displaying Values Rounded to Two Decimal Places	6-11
Drawing Bar Graphs	6-12

Unit 3 Using Attributes to Protect a Cell or Change its Display	6-13
How to Use the Attribute Command	6-14
Resetting a Cell to the Global Attribute	6-16
Controlling Entry of Data Types	6-16
Allowing Entry of All Data Types	6-16
Allowing Entry of Labels Only	6-17
Allowing Entry of Values Only	6-17
Displaying a Formula in a Single Cell	6-17
Preventing a Cell Entry from Changes	6-19
Making an Entry Invisible	6-19
Displaying Numbers with Commas	6-20

Chapter 7 Saving and Loading Worksheets

Unit 1 Overview of the Storage and Utilities Menus	7-3
Introducing the Storage Commands	7-5
Selecting Commands and Options	7-7
Using the ESC Key	7-7
Entering the Prefix	7-8
How to Change the Prefix	7-8
Using Subdirectories	7-10
Rules for Naming Directories and Files	7-11
Editing a File Name or Prefix	7-11
Editing an Existing Prefix	7-12
Unit 2 Saving a Worksheet	7-13
Why You Should Save Your Worksheets Often	7-13
How to Use the Save Command	7-14
Saving a Worksheet That Spans More Than One Data Disk	7-15
Unit 3 Loading a Worksheet	7-18
How to Use the Load Command	7-18
Combining Worksheets	7-19
Loading a Worksheet from More Than One Disk	7-20
Unit 4 Saving and Loading DIF™ Files	7-21
How to Save DIF™ Data	7-21
What Is Saved in a DIF™ File	7-23
How to Load DIF™ Data	7-23
Changing Columns to Rows	7-26

Unit 5 Locking and Unlocking a File	7-27
How to Use the Lock Command	7-27
Unit 6 Displaying the List of File Names	7-29
How to Use the Catalog Command	7-29
Unit 7 Initializing a Data Disk	7-30
How to Use the Init Command	7-30
Unit 8 Deleting a File	7-32
How to Use the Delete Command	7-32
Unit 9 Making Backup Copies	7-33
Copying a File	7-33
Copying a Disk	7-33

Chapter 8 Printing Worksheets

Unit 1 Overview of the Print and Layout Menus	8-3
Introducing the Print Commands	8-4
Selecting Commands and Options	8-7
Using the ESC Key	8-7
Unit 2 Printing a Worksheet	8-8
How to Print a Worksheet	8-8
In Case of Overprinting	8-9
In Case of No Response from the Printer	8-9
Using the Print Options to Control the Printer	8-10
The Prefix Option	8-10
Entering the Upper Left and Lower Right Cells	8-10
Defining the Limits of the Printed Worksheet	8-11
The File Format and DIF™ Order Options	8-12
Selecting the Paper Feed Setting	8-13
Controlling the Line Spacing	8-13
Selecting Page Eject	8-14
Entering a Setup String	8-14
Printing Large Worksheets	8-15
Unit 3 Controlling the Printed Page Layout	8-16
The Horizontal Dimension	8-17
The Paper Width	8-17
The Left Margin	8-18
The Text Width	8-18

The Vertical Dimension	8-19
The Paper Length	8-19
The Top Margin	8-19
The Text Length	8-19
How to Change Any One of the Settings	8-20
Unit 4 Using Setup Strings to Control the Printer	8-21
The Elements of a Setup String	8-21
Unit 5 Printing the List of Cells in a Worksheet	8-23
Printing in DIF™ Format	8-23
Unit 6 Printing a Worksheet on a Data Disk	8-25
How to Use the Disk Command	8-25

Chapter 9 Using the Special FlashCalc™ Functions

Unit 1 Overview of FlashCalc™ Functions	9-5
Why Use the FlashCalc Functions?	9-5
What Are the Parts of a FlashCalc™ Function?	9-5
What Are the FlashCalc Functions?	9-7
Unit 2 The FlashCalc™ Mathematical Functions	9-8
Absolute Value — @ABS(v)	9-8
Average — @AVERAGE(list)	9-10
Cosine — @COS(v)	9-11
Count — @COUNT(list)	9-12
Exponential Value — @EXP(v)	9-13
Integer Value — @INT(v)	9-13
Natural Logarithm — @LN(v)	9-14
Logarithm Base 10 — @LOG10(v)	9-14
Maximum Value — @MAX(list)	9-15
Minimum Value — @MIN(list)	9-16
Pi — @PI	9-17
Rounded Value — @ROUND(v, Number of Decimal Places)	9-17
Sine — @SIN(v)	9-19
Square Root — @SQRT(v)	9-19
Sum — @SUM(list)	9-20
Tangent — @TAN(v)	9-21

Unit 3 Special Purpose FlashCalc™ Functions	9-22
Choose — @CHOOSE(v,list)	9-22
Column — @COL	9-24
Error — @ERROR	9-25
Lookup — @LOOKUP(v,range)	9-26
Not Available — @NA	9-28
Row — @ROW	9-28
Unit 4 FlashCalc™ Logic Functions	9-30
Examples of Logical Choices	9-30
How Logical Statements Are Evaluated	9-31
And — @AND(List of Logical Comparisons)	9-32
False — @FALSE	9-33
If — @IF(Logical Comparison,v1,v2)	9-34
Is Error — @ISERROR(v)	9-36
Is Not Available — @ISNA(v)	9-37
Not — @NOT(Logical Comparison)	9-38
Or — @OR(List of Logical Comparisons)	9-39
True— @TRUE	9-40
Unit 5 FlashCalc™ Financial Functions	9-41
Things to Remember as You Use the Financial Functions	9-42
Future Value — @FV(i,n,pmt,pv)	9-43
Internal Rate of Return — @IRR(investment,range)	9-45
Net Present Value — @NPV(i,range)	9-46
Number of Periods — @PERIODS(i,pmt,pv,fv)	9-48
Payment Amount — @PMT(i,n,pv,fv)	9-49
Present Value — @PV(i,n,pmt,fv)	9-50
Interest Rate — @RATE(n,pmt,pv,fv)	9-51

Appendixes

Appendix A: Converting Worksheets from Other Programs	A-4
Notes on Converting Worksheets	A-4
ProDOS Conversion	A-4
Loading Converted Worksheets	A-4
Checking the Results	A-4
Where Can You Get Additional Worksheets?	A-5

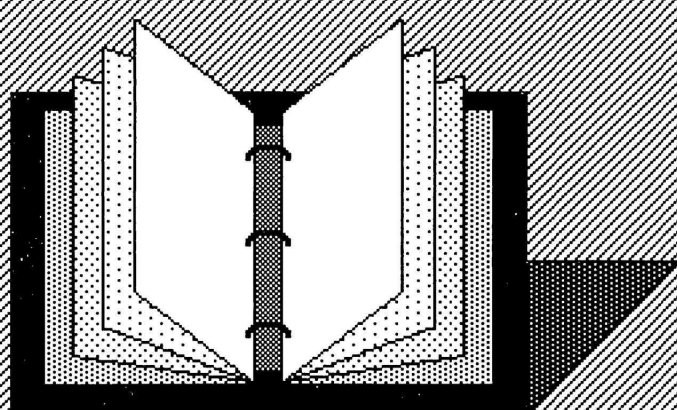
Appendix B: Formulas behind the Financial Functions	B-1
Future Value	B-1
Internal Rate of Return	B-2
Net Present Value	B-2
Number of Periods	B-2
Payment Amount	B-2
Present Value	B-3
Rate	B-3
Appendix C: Error Messages	C-1
Appendix D: Tailoring the Program to Your Computer	D-1
Do You Need to Tailor the Program?	D-2
Overview of the Hardware Menu	D-3
Introducing the List of Options	D-4
Introducing the Hardware Commands	D-4
Filling out the List of Options	D-5
Moving the Cursor	D-5
The Prefix Option	D-6
Indicating Video Display Case	D-6
Indicating Keyboard Typing Case	D-7
Specifying the One-Wire Shift Key	D-8
Indicating the Printer Slot Number	D-9
Indicating the Video Slot Number	D-10
Loading a Video Driver	D-11
Saving the Configuration File	D-13
Reloading the Program	D-15
If You Have an Apple II Plus	D-17
Using the Space Bar	D-17
Using CTRL Key Combinations	D-18
Tabbing Forward and Backward	D-18
Moving the Cursor in the Menus	D-19
Using the REPT Key	D-19
Printing Lowercase Characters	D-20
Typing Special Characters with the One-Wire Shift Key Modification	D-21
Appendix E: Using a Profile™ Hard Disk	E-1
Installing the Program on Your ProFile™ Hard Disk Drive	E-1
Loading the Program from the Profile™ Hard Disk Drive	E-4

List of Figures

Figure	Title	
1-1.	Status Area of the Worksheet	1-3
1-2.	The FlashCalc™ Worksheet	1-8
1-3.	Rows and Columns	1-9
2-1.	Entering a Label that is Wider than the Column	2-4
2-2.	How Values Longer Than the Column Width are Displayed	2-9
2-3.	Screen Display after Entering a Formula	2-11
2-4.	Worksheet with Lines Drawn on It	2-18
3-1.	Forward References by Row and by Column	3-10
3-2.	Horizontal Windows	3-16
3-3.	Vertical Windows	3-17
4-1.	Inserting a Column	4-5
4-2.	Deleting a Row	4-8
4-3.	Moving a Column	4-11
5-1.	Making One Copy of a Single Cell	5-7
5-2.	Copying a Cell across a Row	5-8
5-3.	Copying a Cell down a Column	5-8
5-4.	Making One Copy of a Column	5-10
5-5.	Making Several Copies of a Column	5-11
5-6.	Making One Copy of a Row	5-12
5-7.	Making Several Copies of a Row	5-13
5-8.	Making One Copy of a Block	5-14
5-9.	Making Several Copies of a Block	5-15
5-10.	Choosing between Relative and No Change	5-17
6-1.	Displaying Monthly Sales in Graph Format	6-12
6-2.	Worksheet Displayed Using the Expression Format	6-18
7-1.	The Storage Menu	7-4
7-2.	The Utilities Menu	7-6
7-3.	Sample Worksheet	7-25
7-4.	Sample DIF™ File After Reloading	7-25
7-5.	DIF™ File Loaded in Row Order	7-26
8-1.	The Print Menu	8-5
8-2.	The Layout Menu	8-6
8-3.	Area of a Worksheet to Be Printed	8-11
8-4.	The Lower-Right Limit of a Worksheet	8-12
8-5.	Printing Large Worksheets	8-15
8-6.	Effects of the Layout Options	8-17

9-1.	The Absolute Value Function	9-9
9-2.	The Average Function	9-10
9-3.	The Count Function	9-12
9-4.	The Maximum Function	9-15
9-5.	The Minimum Function	9-16
9-6.	The Round Function	9-18
9-7.	The Sum Function	9-20
9-8.	The Choose Function	9-23
9-9.	The Column Function	9-24
9-10.	The Error Function	9-25
9-11.	Types of Tables Used by the Lookup Function	9-26
9-12.	The Lookup Function	9-27
9-13.	The Row Function	9-29
9-14.	The And Function	9-33
9-15.	The False Function	9-34
9-16.	The If Function	9-35
9-17.	The Iserror Function	9-36
9-18.	The Is Not Available Function	9-38
9-19.	The Not Function	9-39
9-20.	The True Function	9-40
9-21.	The Future Value Function	9-44
9-22.	The Internal Rate of Return Function	9-46
9-23.	The Net Present Value Function	9-47
9-24.	The Number of Periods Function	9-48
9-25.	The Payment Function	9-49
9-26.	The Present Value Function	9-50
9-27.	The Interest Rate Function	9-51
D-1.	The Hardware Menu	D-3
D-2.	The Video Driver List	D-12
E-1.	The Installation Menu	E-3
E-2.	The FlashCalc™ Startup Screen	E-5
E-3.	The FlashCalc™ Worksheet	E-6

Table	Title	
1-1.	Explanation of Typefaces	xvii
2-1.	Symbols Used in Formulas	2-12
2-2.	Valid Formulas	2-13
9-1.	The Logical Value of Comparisons	9-32
9-2.	The Arguments Used in the Financial Functions	9-42
D-1.	Entering Special Characters with CTRL-B	D-22



Using the
Reference Guide

Using the Reference Guide	xvii
Chapter Summaries	xviii
Finding Information on Commands	xx

USING THE REFERENCE GUIDE

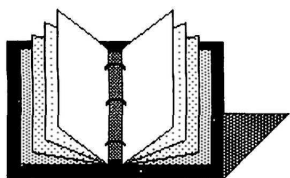
As you create worksheets with the FlashCalc™ program, you will perform certain tasks. To help you find information quickly and easily, this manual is organized according to the tasks involved in designing a worksheet. These tasks include entering values and labels, erasing and revising entries, moving and copying information, and creating formulas to calculate the entries.

The manual is not intended to be read from cover to cover. Each unit is self-contained, so you can refer to sections only as necessary. For example, if you need help on moving a row or column, refer to the unit that explains that task. You do not have to read the entire chapter, only those units that interest you.

The different type faces used in this manual are described below.

Table 1. Explanation of Typefaces

Type Style	Description
KEY NAME	Special keys, such as RETURN , SHIFT , and so on, appear in boxes. This means you should press the specified key, rather than typing the word in the box.
<i>Italics</i>	Terms that may be new to you and which require further explanation appear in italics. An explanation usually follows the term.
Boldface	Characters that you type on the keyboard appear in the heavier typeface shown here. For example, "Type Budget " means you should type the word "Budget." Commands also appear in this typeface and can be entered as either upper or lower case.
Lightface	Messages or words that are displayed on your screen appear in lightface type. For instance, "The prompt line displays the word Blank" shows you exactly what to look for on your screen.



CHAPTER SUMMARIES

CHAPTER 1: LEARNING THE FUNDAMENTALS examines in detail most of the fundamentals involved in using the FlashCalc program. Many of these items have been covered in the QuickStart® Course, but you may want to refer here for further explanation or when you need to refresh your memory.

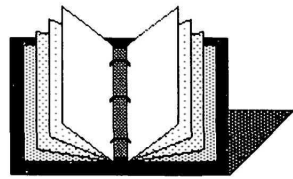
CHAPTER 2: WRITING AND ERASING ON A WORKSHEET explains how to enter labels, values, and formulas on a worksheet, and there is a separate unit on drawing lines on a worksheet. This chapter also describes how to edit or erase a single entry.

CHAPTER 3: MAKING GLOBAL DISPLAY CHANGES covers all tasks that deal with changing the worksheet as a whole, rather than those that affect only individual cells. Information on changing the column widths, as well as ways of recalculating a worksheet are discussed here. You will also find units on erasing the entire worksheet, simultaneously viewing two parts of a worksheet, and keeping selected columns or rows in view while moving through a worksheet.

CHAPTER 4: POSITIONING ROWS AND COLUMNS explains how to insert blank rows and columns, and how to delete or move rows and columns on a worksheet.

CHAPTER 5: COPYING CELL ENTRIES discusses the different ways of copying information from one part of a worksheet to another. There are different methods for copying single entries, rows or columns, and a rectangular area. This chapter also describes how to copy formulas and selected characteristics of a cell.

CHAPTER 6: CONTROLLING A CELL provides instructions on changing the way information appears in cells. You can change a cell's display with the Format command, or control the type of information that can be entered into a cell with the Attribute command.



CHAPTER 7: SAVING AND LOADING WORKSHEETS contains all information that deals with the storage and retrieval of worksheets. In addition, it explains how to lock and unlock a file so that you can prevent accidental deletion of a worksheet. Information on preparing data disks and on making backup copies can also be found here.

CHAPTER 8: PRINTING WORKSHEETS covers those aspects of the program that relate to printing worksheets. There are different settings you can use to control your printer. The program also provides different ways of modifying the size and layout of printouts.

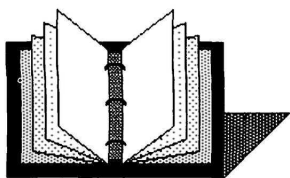
CHAPTER 9: USING THE SPECIAL FLASHCALC™ FUNCTIONS discusses the functions that are used for such things as adding values, finding an average, finding the maximum and minimum values in a series, determining the square root of a number, and for other mathematical and financial calculations. See the Table of Contents for a complete list of the functions.

APPENDIX A: CONVERTING WORKSHEETS FROM OTHER PROGRAMS describes how you can use worksheets that were created with other programs with the FlashCalc program.

APPENDIX B: FORMULAS BEHIND THE FINANCIAL FUNCTIONS contains information on the formulas that were used to create the FlashCalc functions that are explained in Chapter 9.

APPENDIX C: ERROR MESSAGES provides a list of the error messages which might occur while using the program. The list describes the conditions that may cause an error and the most likely solution to the problem.

APPENDIX D: TAILORING THE PROGRAM TO YOUR COMPUTER provides specific instructions on altering the program for certain equipment. See the *Getting Started Guide* for more information on whether you need to refer to this section.



Using the Reference Guide

APPENDIX E: USING A PROFILE™ HARD DISK contains instructions for installing and loading the program on a hard disk system.

The **INDEX** provides a quick reference to topics covered in the manual. It is also useful for finding references to the commands used in the program.

FINDING INFORMATION ON COMMANDS

The following is an alphabetized list of all program commands with a brief summary of each. The list also directs you to the section of the manual that discusses the command.

/A—Attribute

The Attributes command restricts the type of entry at single locations on the worksheet. For instance, you might want to enter only labels or only values at certain locations. This command can also cause entries to be hidden from view or can protect entries from subsequently being changed.

See Chapter 6, Unit 3.

/B—Blank

The Blank command erases a single entry on the worksheet.

See Chapter 2, Unit 6.

/C—Clear

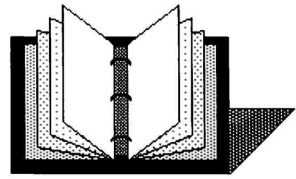
The Clear command erases the entire worksheet.

See Chapter 3, Unit 5.

/D—Delete

The Delete command removes a row or column.

See Chapter 4, Unit 2.



/E—Edit

The Edit command lets you correct part of an entry, without requiring you to retype the entire value, label, or formula.

See Chapter 2, Unit 5.

/F—Format

The Format command controls the appearance of selected entries. For example, you can display values as integers or with one or more decimal places, or you can change the alignment of an entry within a cell.

See Chapter 6, Unit 2.

/G—Global

The Global command controls the appearance of the entire worksheet. You can change the way values are displayed throughout the worksheet, and you can set the width of columns with this command. You can also use this command to change the way the worksheet is recalculated.

See Chapter 3, Units 1 through 4.

/H—Hardware

The Hardware command tailors the program to your computer.

See Appendix D.

/I—Insert

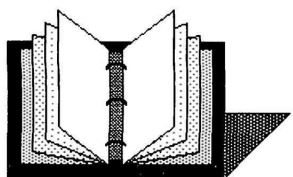
The Insert command inserts a blank row or column on the worksheet.

See Chapter 4, Unit 1.

/M—Move

The Move command moves a row or column to a new location on the worksheet.

See Chapter 4, Unit 3.



Using the Reference Guide

/P—Print

The Print command causes the worksheet to be printed on your printer or on a disk. You can modify the layout and size of the worksheet and specify settings that correspond to your particular printer.

/Q—Quit

The Quit command exits the FlashCalc program without requiring you to reload ProDOS before loading another program.

See Chapter 1, Unit 6.

/R—Replicate

The Replicate command copies single cells, columns or rows, and rectangular areas from one location on the worksheet to another. You can also copy formulas and cell characteristics with this command.

See Chapter 5, Units 1 through 9.

/S—Storage

The Storage command saves and loads worksheets to and from a data disk. The Utilities menu has commands to maintain the worksheet files on a disk.

See Chapter 7, Units 1 through 4.

/T—Titles

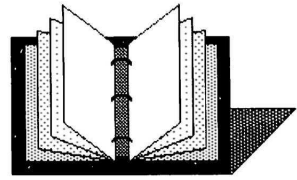
The Titles command keeps specified rows or columns in view while moving through a worksheet on the screen.

See Chapter 3, Unit 7.

/V—Version

The Version command displays the version number of your FlashCalc program.

See Chapter 1, Unit 5.



Using the Reference Guide

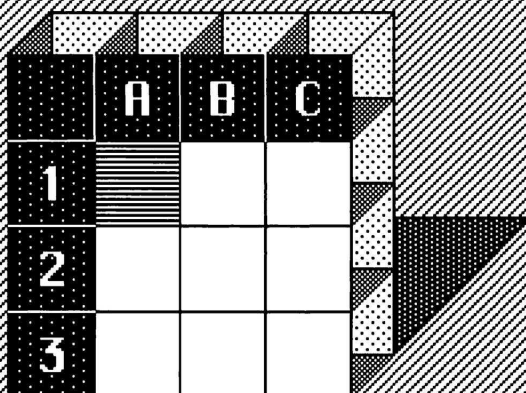
/W—Window

The Window command divides the screen either vertically or horizontally so that you can view two parts of a worksheet simultaneously.

/-- Repeating Label

The Repeating Label command reproduces one or more characters across a cell. This command is especially useful for drawing lines on a worksheet.

See Chapter 2, Unit 4.



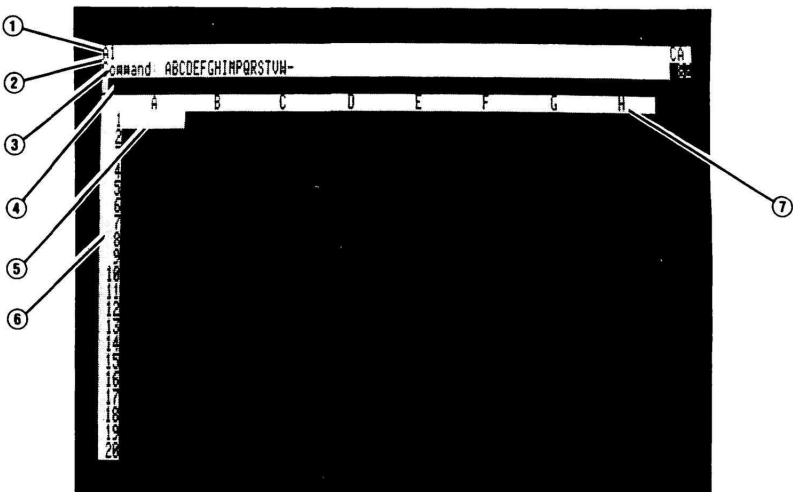
Learning the Fundamentals

Chapter 1 Learning the Fundamentals

Unit 1 Viewing the Status Area of the Screen	1-3
Identifying the Entry, Prompt, and Edit Lines	1-4
How a Worksheet Is Calculated	1-4
How Much Memory Is Used by a Worksheet	1-5
Unit 2 Using the FlashCalc™ Commands	1-7
Unit 3 Overview of the Worksheet	1-8
Defining Rows and Columns	1-8
Unit 4 Moving to Parts of the Worksheet	1-10
Moving to a Nearby Cell	1-10
Moving to a Named Cell	1-10
Moving a Set Distance	1-11
Moving to the First or Last Entry of a Worksheet	1-11
Unit 5 Viewing the Program Version Number	1-12
Unit 6 Exiting the Program	1-13

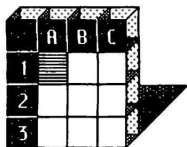
VIEWING THE STATUS AREA OF THE SCREEN

The *status area* of the screen, shown in Figure 1-1, is the space above the top line of the worksheet. The FlashCalc™ program displays information in this area about the commands you select and your entry location on the worksheet. It also indicates in what order values are calculated and the amount of memory available.



- ① Current cell coordinates
- ② Entry line
- ③ Prompt line
- ④ Edit line
- ⑤ Cursor
- ⑥ Row labels
- ⑦ Column labels

Figure 1-1. Status Area of the Worksheet



Learning the Fundamentals

IDENTIFYING THE ENTRY, PROMPT, AND EDIT LINES

The status area includes three distinct parts.

- **Entry line.** The entry line is the top line in the status area. This line displays the current location of the cursor. The *cursor* is the rectangle that indicates your location on the worksheet. Press **↓** once. The location displayed in the entry line changes.

The entry line also displays other relevant information, such as whether the location contains a label or a value, or whether you have selected formatting commands that affect the appearance of your worksheet.

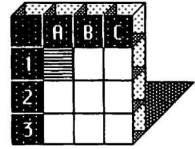
- **Prompt line.** The prompt line is the second line in the status area. This line usually displays the available choices after you select a command.
- **Edit line.** The third line in the status area (the dark bar) is the edit line. When you are typing a value or a label, each character appears here as you type it. After you complete your entry, press **RETURN**.

If you make a mistake before pressing **RETURN**, you can press **ESC** to erase the last character on the edit line. Then just type the correct character. See Chapter 2 for further information on correcting mistakes.

HOW A WORKSHEET IS CALCULATED

The letters in the upper-right corner of the status area indicate the method by which a worksheet is calculated. Each time you enter new values that affect the formulas in your worksheet, the program recalculates the entire worksheet. If you have not changed the method of calculation, the program uses the following settings.

- **Order of Recalculation Indicator.** The first letter in the upper-right corner is the Order of Recalculation Indicator. The **C** is short for Column order and indicates that the program calculates the worksheet by columns. That is,



Viewing the Status Area of the Screen

first it calculates all the values in Column A, starting with Row 1 and moving down, then it goes to the top of Column B and moves down, and so forth.

The Order of Recalculation Indicator can also be set to R for Row order. Most likely, you will want to use the current setting of C. For further information on changing the recalculation order, see Chapter 3.

- **Mode of Recalculation Indicator.** The second letter in the upper-right corner is the Mode of Recalculation Indicator. The letter A is short for Automatic mode and indicates that each time a value is changed, the program automatically recalculates the worksheet.

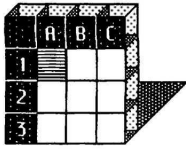
The recalculation mode can also be set to M for Manual. In that case, the worksheet gets recalculated only at the times you specify. It is advantageous to use the manual mode when you have an especially large worksheet, so that you do not have to wait for the worksheet to be recalculated each time you change a value. Refer to Chapter 3 for additional information.

Notice that the Mode of Recalculation Indicator changes to an exclamation point while the worksheet is recalculating.

HOW MUCH MEMORY IS USED BY A WORKSHEET

The number in the upper-right corner of the status area, beneath the recalculation indicators, represents the amount of memory available for your worksheet. This number decreases as you enter additional information. The number refers to the amount of kilobytes available. Since a kilobyte can store about 1000 characters, the number changes only at certain intervals, not every time you make an entry. (The number on your screen might differ from the one shown in Figure 1-1.)

If the program uses up all the available memory in the midst of performing a function, it will complete as much of the function as it can before running out of memory. For instance, if you are



Learning the Fundamentals

replicating a range of figures, the program will replicate only that portion of the range that can be completed before running out of memory.

If a worksheet uses all the available memory, the FlashCalc program displays 0 as the memory indicator and an error message that reads *Out of memory*. If this occurs, the program prevents you from making any additional entries to the worksheet. The program beeps if you try to type labels, values, or formulas.

USING THE FLASHCALC™ COMMANDS

Besides typing values and labels on your worksheet, you will also enter commands. Commands cause the program to perform special functions in one or more locations on the worksheet.

All commands begin with a slash (/). You then select a command by typing the initial letter of the function. For instance, to select the Window command, you type **/W**.

After you type **/**, the program displays the command line:

Command: ABCDEFGHIMPQRSTVW—

The FlashCalc program includes commands for:

- erasing an entry
- saving and retrieving a worksheet
- creating a horizontal or vertical window so you can view two parts of a worksheet simultaneously

For a complete list of commands and their uses, refer to *Using the Reference Guide* at the beginning of this manual. The list also directs you to the appropriate chapter and unit for details on using a command.

OVERVIEW OF THE WORKSHEET

The worksheet that appears on your screen replaces the need for an ordinary financial spreadsheet. Instead of using paper and pencil to record and revise figures, and then manually calculating values, you will be able to use the FlashCalc worksheet.

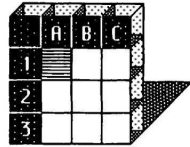
The screen that appears after you load the FlashCalc program is shown in Figure 1-2.



Figure 1-2. The FlashCalc™ Worksheet

DEFINING ROWS AND COLUMNS

The worksheet is similar to a piece of graph paper and is designed so that you can easily move to any part of the grid. The horizontal lines are called *rows* and are labeled with numbers. The vertical lines are called *columns* and are labeled with letters. Rows and columns are identified in Figure 1-3.





Overview of the Worksheet

The intersection of a row and column is called a *cell*. You can write labels, values, or formulas in any cell on the worksheet. The row and column name together are called the *cell coordinates*. Whenever you begin a new worksheet, the cursor is located in the first cell, and the cell coordinates (A1) appear in the entry line of the status area.

You are actually viewing only a small portion of the worksheet. It contains a total of 254 rows and 63 columns. The rows are labeled 1 through 254 along the left side of the worksheet, and the columns are labeled A through BK across the top.

Your screen acts like a window that shows you a small piece of the entire worksheet. By moving this window around, you can view any other part of the worksheet.

Press  several times and watch the screen as the cursor moves to the right each time. After the cursor reaches the rightmost column, press  one more time. Notice that the column headings change as you do so. When you press an arrow key and hold it down so that the worksheet moves continuously in one direction, it is called *scrolling*. Scroll in other directions to get a feel for how this works.

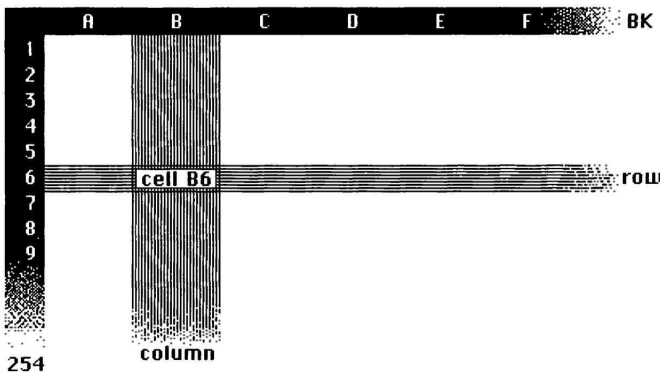



Figure 1-3. Rows and Columns


MOVING TO PARTS OF THE WORKSHEET

The location of the cursor shows you where your entry will be placed on the worksheet. Remember that you can always check the status area for the cell coordinates if you are not sure of the cursor's position.

Each time you begin working on a new worksheet, it appears with the cursor at cell A1. The entry line in the status area displays A1 as the cursor location. There are several ways that you can move to different cells on the worksheet.

MOVING TO A NEARBY CELL

To move to a nearby cell, you will probably want to use one of the arrow keys. You can press any of the four arrow keys to move in the designated direction. Try pressing  once to move the cursor one cell to the right. When you hold an arrow key down, the cursor scrolls (moves continuously) in that direction.

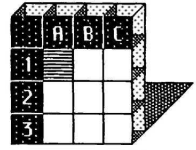
Notice that if you press  with the cursor in Row 1, the computer buzzes. Likewise if you try to move past any of the worksheet's four borders, you will hear that same buzz. This is the program's way of telling you that you are colliding with the edge of the worksheet.

MOVING TO A NAMED CELL

If you want to move to a specific cell, especially if it is some distance from the cursor, you will probably want to use the *Go To key* (>) sequence. The Go To key sequence moves the cursor directly to the named cell.

To begin the Go To key sequence, type >. Then type the coordinates of the cell to which you want the cursor to move. Then press **RETURN**. For instance, to move to cell F12, first type:

>



Moving to Parts of the Worksheet

(You must hold down the **SHIFT** key, while typing >.) The message, Go to: coordinate appears on the prompt line. Type:

F12 **RETURN**

The cursor moves to cell F12.

MOVING A SET DISTANCE

There is a special combination of keys you can use when you want to move through several rows at a time rather than row by row. You can move rapidly through a large portion of the worksheet and still view all the rows. While holding down the **CTRL** key, you can press one of two keys to move the cursor either ten lines up or down the worksheet.

To move the cursor ten lines up the worksheet, press **W** while holding down the **CTRL** key.

To move the cursor ten lines down the worksheet, press **X** while holding down the **CTRL** key.

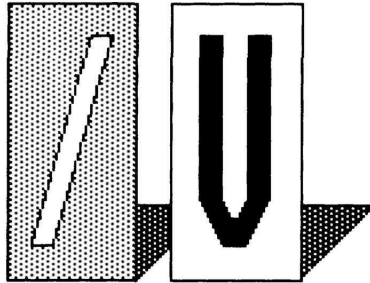
MOVING TO THE FIRST OR LAST ENTRY OF A WORKSHEET

There is a special combination of keys you can use to move the cursor to either the first or last entry of the worksheet. While holding down the **CTRL** key, you press one of the two keys named below.

To move the cursor to the first entry of the worksheet, press **R** while holding down the **CTRL** key.

To move the cursor to the last entry of the worksheet, press **V** while holding down the **CTRL** key.

VIEWING THE PROGRAM VERSION NUMBER



VERSION

Display copyright notices, version numbers, and serial number.

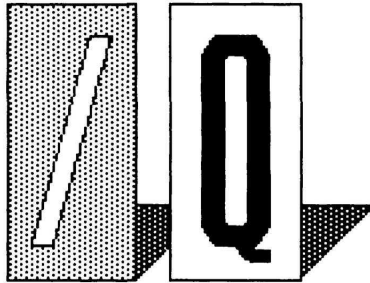
If you have any questions about the FlashCalc program and need to contact your dealer or VisiCorp's Customer Service Department, you must know the program's version number. You can use the Version command to display the version number on your screen.

To view the version number, type:

/V

The program displays the version number and the serial number in the status area. The program automatically clears the message from the screen when you press another key.

EXITING THE PROGRAM



QUIT

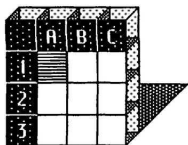
- C Return to worksheet.
- O Set options:
Prefix—Directory to use for storing.
- B Leave the FlashCalc program and load another program without loading ProDOS

You can use the Quit command (/Q) if you want to leave the FlashCalc program and load another program without first turning off your computer and loading ProDOS. Always be sure to save your worksheet before leaving the program.

If you don't want to start another program, it's not necessary to use the /Q command; you can remove your disks and turn the computer off.

If you do want to load another program, type:

/Q



Learning the Fundamentals

The edit line reads Calc Options Boot. Type:

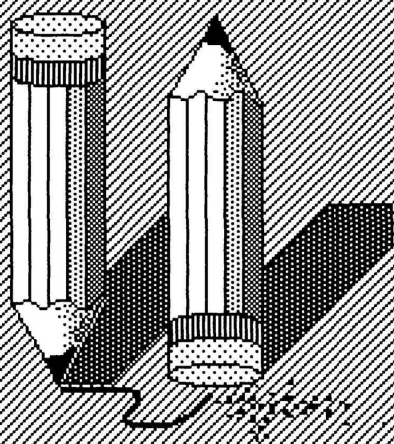
B

The prompt line now reads Enter prefix, ESC, RETURN, or ,S,D. Remove your FlashCalc program disk and insert the other program disk. Type:

,D1

(All programs must be loaded from Drive 1.) After a few seconds, the program is loaded.

If you type /Q and find that you really don't want to leave the FlashCalc program, simply type C for Calc and you will be returned to the FlashCalc worksheet.



**Writing and Erasing
on a Worksheet**

Chapter 2 Writing and Erasing on a Worksheet

Unit 1 Entering Labels	2-3
Correcting Mistakes	2-5
Unit 2 Entering Values	2-6
Using # to Copy Values	2-7
Accuracy of Values	2-8
Unit 3 Entering Formulas	2-10
Symbols Used in Formulas	2-12
How Formulas Are Calculated	2-13
Specifying Other Cells in a Formula	2-14
Displaying the Result of a Formula	2-15
Unit 4 Drawing Lines on a Worksheet	2-17
How to Use the Repeating Label Command	2-18
Unit 5 Editing an Entry	2-19
How to Use the Edit Command	2-20
Unit 6 Erasing an Entry	2-22
How to Use the Blank Command	2-22

ENTERING LABELS

Any entry on your worksheet, other than a value or formula that is calculated, is considered a *label* by the program. Labels can include titles, headings, names, dates, or any descriptive information that appears on the worksheet. Labels can consist of any combination of letters, numbers, and symbols, such as #, -, and &.

If an entry begins with a letter or a symbol other than + (plus sign), ((left parenthesis), - (minus sign), @ (at sign), or . (decimal point), the program assumes it is a label. Therefore, in most cases, you just type the desired label and press **RETURN** or one of the arrow keys.

However, if an entry begins with either a number or one of the special characters listed in the preceding paragraph, the program assumes it is a value. In that case, you must first type " to signal to the program that you mean to enter a label.

For example, if you want to enter the word "Total", just type:

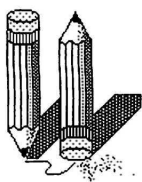
Total **RETURN**

If you want to enter the year "1984" (in this case the numbers represent a label rather than a value), type:

"1984 **RETURN**

After you type the first character of the label, or " if necessary, the word *Label* appears in the prompt line of the status area. The edit line displays the character that was typed, and each subsequent character appears as it is typed. Likewise, the characters also appear in the cell as they are typed.

After you finish entering the label, press **RETURN** or one of the arrow keys. Pressing **RETURN** completes the entry and causes the cursor to remain at the entry location. Pressing one of the arrow keys completes the entry and immediately moves the cursor in the direction indicated by the arrow.



Writing and Erasing on a Worksheet

After you press **(RETURN)**, the entry line changes. The symbol for a label, **(L)**, and the label itself, appear to the right of the cell coordinates.

You can enter a label that is wider or longer than the current cell width, but only that portion of the label that fits within the column appears on the screen. The complete label is retained in memory and appears on the entry line.

For example, move the cursor to cell C3. Type:

Sample Label **(RETURN)**

The screen appears as shown in Figure 2-1.

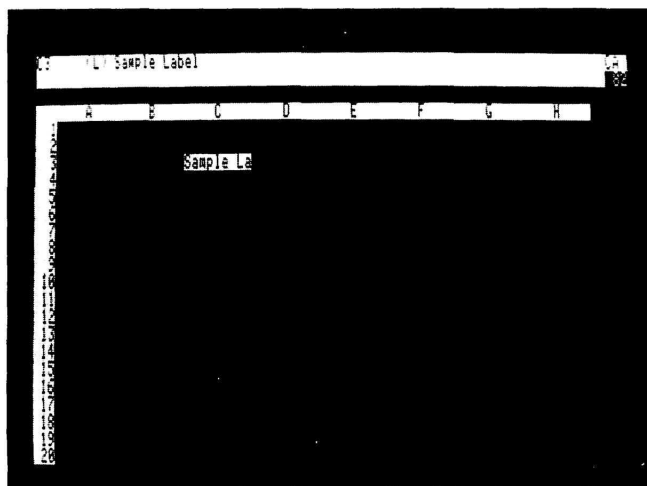
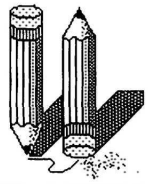


Figure 2-1. Entering a Label that is Wider than the Column

You can also change the column width to accommodate the size of your entries. See Chapter 3 for information on changing column widths.



CORRECTING MISTAKES

If you make a mistake while entering a label or value, you can press **ESC** to delete the incorrect characters. Then, type the correct characters and press **RETURN** or an arrow key.

Or, you can press **CTRL-E** to edit the error. When you edit an entry, you can move through the typed characters without deleting them. Press **←** or **→** to move to the left or right, or press **↑** or **↓** to move to the beginning or end of the entry. If you want to erase an entire entry, you can use the Blank command (/B). For complete instructions on editing an entry and on using the Blank command, see Units 5 and 6 later in this chapter.

ENTERING VALUES

Any numeric entries, except numbers used in labels, are considered to be *values* by the program. The program also identifies formulas as values. In other words, any entry that the program uses in its calculations is classified as a value. For further details on formulas, see Unit 3 in this chapter.

Values can contain:

- Numbers, such as 5, -10, or 2.53.
- Symbols that represent arithmetic operators: + (plus sign), - (minus sign), * (multiplication sign), and / (division sign).
- The ^ symbol which raises a value to a specified power.
- The *at sign* (@) which signals the beginning of a FlashCalc function. (See Chapter 9 for more information.)
- Left and right parentheses.

If you want to enter a formula that begins with a reference to another cell, you must begin the formula with a + (plus sign) to signal to the program that it is a value rather than a label. For instance, to enter the formula "A1+B1+C1", type:

+A1+B1+C1 **RETURN**

After you type the first character of the value, the program displays the word *Value* in the prompt line of the status area. The edit line displays the character that was typed, and each subsequent character appears as it is typed.

After you finish entering the value, press **RETURN** or one of the arrow keys. Pressing **RETURN** completes the entry and causes the cursor to remain at the entry location. Pressing one of the arrow keys completes the entry and immediately moves the cursor in the direction indicated by the arrow.



Entering Values

After you press **RETURN**, the entry line changes. The symbol for a value, (V), and the value itself, appear to the right of the cell coordinates.

If you enter a value that is wider than the column width, or if a formula produces a result that is too wide for the column, then the program displays the value in scientific notation. However, the full value is retained in memory.

You can also change the column width to accommodate the size of your entries. See Chapter 3 for information on changing column widths.

USING # TO COPY VALUES

You can use the number sign (#) to transfer the value from one cell to another. With this feature, you do not actually move the value, but just copy it identically from another location on the worksheet.

Suppose you want to place the value from C1, 12341234, in cell A1. To do this, first position the cursor at A1. Type:

+

Typing the plus sign tells the program that you are about to enter a value. Press:



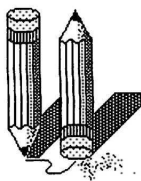
The cursor is now located at C1. Type:

#

The edit line reads +12341234 and the cursor returns to A1. Press:

RETURN

The value from the edit line (12341234) is entered at A1.



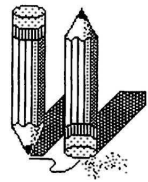
Writing and Erasing on a Worksheet

ACCURACY OF VALUES

When the worksheet first appears on the screen, the column width is 9 and numbers are displayed to their maximum precision. Numbers are displayed either conventionally or in scientific notation depending on the greatest precision that can fit within the confines of the column width. Both the column width and the way numbers are displayed can be changed. See Chapters 3 and 6 for details on changing the appearance of the worksheet.

Although display characteristics can vary, the FlashCalc program stores all values in base 10 with either 11 or 12 significant digits. Worksheets can contain numbers ranging from E-62 to E63. (In scientific notation, E63 stands for 10 to the 63rd power.) In a worksheet with the column width set to 9, the 10-character number 1357913579 is displayed in scientific notation as 1.3579E9. The program deletes nonsignificant zeroes.

Sometimes when you reduce the column width or change the display characteristics, a number cannot be displayed accurately in a cell. If a number cannot fit within the confines of the column width, either conventionally or in scientific notation, the cell is filled with > signs, as shown in Figure 2-2.



Entering Values

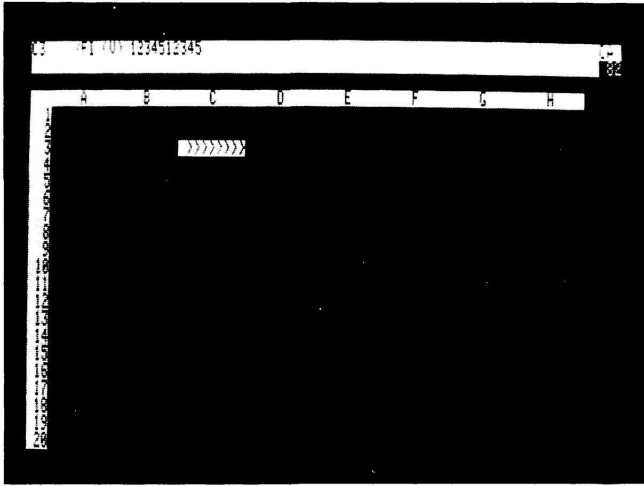


Figure 2-2. How Values Longer than the Column Width are Displayed

Changing the column width and the display characteristics affects only the appearance of the worksheet; the exact number is still kept in memory. Numbers can be displayed in a variety of ways, such as with up to six decimal places, in dollar amounts, or as integers. For details on changing a worksheet's display characteristics, see Chapter 3.

ENTERING FORMULAS

A *formula* can include references to other cells (cell coordinates) or numeric values and is classified by the program as a value. Formulas instruct the program how to calculate the entries on the worksheet.

Formulas can contain:

- Numbers, such as 5, -10, 2.53, or 5E8.
- Symbols to represent calculations: + (plus sign), - (minus sign), * (multiplication sign), and / (division sign).
- The ^ symbol which raises a value to a specified power.
- The *at sign* (@) which signals the beginning of a FlashCalc function. (See Chapter 9 for more information.)
- Left and right parentheses.
- Cell coordinates such as C5 that references a single cell, or such as D4...D8 that references a range of cells.

After you type + to begin a formula, the word **Value** appears in the prompt line of the status area. The edit line displays the character that was typed, and each subsequent character appears as it is typed.

After you finish entering the formula, press **RETURN** or one of the arrow keys. Pressing **RETURN** completes the entry and causes the cursor to remain at the entry location. Pressing one of the arrow keys completes the entry and immediately moves the cursor in the direction indicated by the arrow.

After you press **RETURN**, the formula's calculated result appears in the cell. Also, the entry line changes. The symbol for a value, (V), and the formula, appear to the right of the cell coordinates.

Figure 2-3 shows how the screen looks after a formula has been entered.



Entering Formulas

The formula in this cell is: $+A1+(A4/3)*A2$

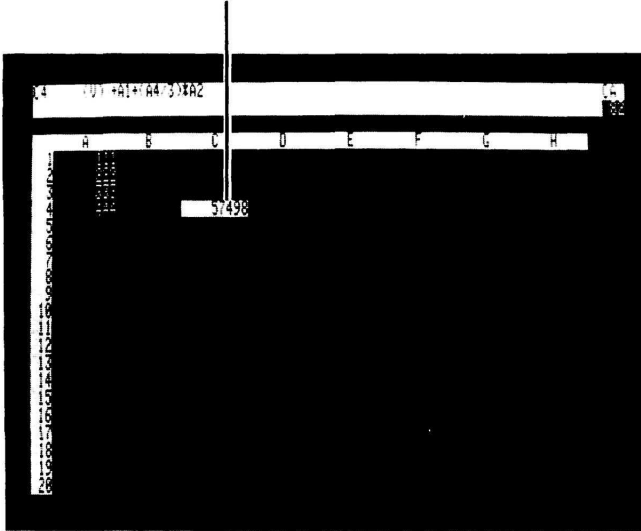
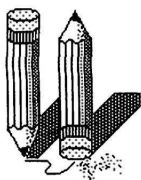


Figure 2-3. Screen Display after Entering a Formula

If you want the formula itself displayed in the cell, rather than the result, type **/AE**. See Chapter 6 for more information on using the Attribute command.

The program prevents you from entering an unacceptable or illegal formula, such as one that ends with an arithmetic operator. If you press **(RETURN)** after entering such a formula, the computer beeps to let you know that your entry is incorrect. You must then change the formula or delete it. If a formula is valid but produces an illegal result, such as dividing a number by zero, the program displays the word **ERROR** in the subject cell and in any cells that reference that cell.



Writing and Erasing on a Worksheet

Note:

In some cases, it may be more efficient for you to use one of the FlashCalc functions, rather than entering a formula. For instance, if you want to add the values in cells A1 through A8, it would be simpler to use the Sum function rather than writing out the formula. Instead of entering the formula $(+A1 + A2 + A3 + A4 + A5 + A6 + A7 + A8)$, you would enter **@SUM(A1...A8)**. Similarly, there are additional functions that can take the place of other formulas. Refer to Chapter 9 for more information on using functions.

SYMBOLS USED IN FORMULAS

The arithmetic operators are the symbols used in formulas to perform operations such as adding, multiplying, and so on. The symbols that you can use in a formula are shown in Table 2-1.

Table 2-1. Symbols Used in Formulas

Symbol	Calculation Performed
+	Adds values
-	Subtracts values
*	Multiplies values
/	Divides values
^	Raises a value to a specified power

The program calculates that part of a formula in parentheses first, and arithmetic operators are calculated from left to right. Examples of valid formulas and how they are calculated are shown in Table 2-2.

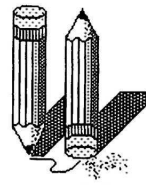


Table 2-2. Valid Formulas

Formula	Description
+ A5/B4-B3	Divide the value in A5 by the value in B4. Then subtract the value in B3.
D2-100	Subtract 100 from the value in D2.
D2-100*4	Subtract 100 from the value in D2. Multiply the result by 4.
+ C2*(B3-B4)	Subtract the value in B4 from the value in B3. Multiply the result by the value in C2.
+ C2*B3-B4	Multiply the value in C2 by the value in B3. Then subtract the value in B4 from the result.
A2^3	Raise the value in A2 to the power of 3.

Notice that the placement of parentheses causes quite a difference in how the program calculates a formula. For example, assume that the value in cell C2 is 50, B3 contains 20, and B4 contains 15. The formula +C2*(B3-B4) would produce a result of 250, whereas the formula +C2*B3-B4 would produce a result of 985.

HOW FORMULAS ARE CALCULATED

The program performs formula calculations that are in parentheses first. If there are parentheses within parentheses, the innermost set are calculated first. The program then makes formula calculations in the order it encounters each operator from left to right. No operator takes precedence over another. For example, the result of $12 + 24 / 3 * 4$ is 48, but the result of $12 + ((24 / 3) * 4)$ is 44.

The length of a formula can vary depending on the number of cell references, symbols, and parentheses that you use, and the amount of available memory. If the program beeps while you are entering a formula, it means that the formula has become too complex and you cannot enter any additional characters. Only that portion of the formula that appears on the edit line can be entered.



Writing and Erasing on a Worksheet

If the Recalculation Indicator is set to Automatic, the program automatically recalculates the worksheet each time you enter a value. (You can set the Recalculation Indicator to Manual if you do not want the program to automatically recalculate the worksheet each time a value is entered.) See Chapter 3 for more information on changing the mode of recalculation.


The order in which the cells are calculated can be changed from Column to Row order. If you change the recalculation order to Row order, you must be careful that your formulas do not contain forward references. For more information on changing the order of recalculation, see Chapter 3.

SPECIFYING OTHER CELLS IN A FORMULA

Formulas can contain values or cell coordinates that represent values. If you want to use the value from another location on the worksheet, type the cell coordinates as part of the formula. For instance, if you want to add the value in cell A1 plus the value in B1, you would type **+A1+B1**.

You can also include the cell coordinates in a formula by *pointing* to the desired cell. For example, assume you want to write the formula **1500+C1** in cell A1. Type:

1500+

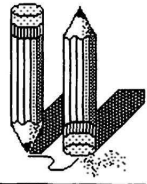
Then, instead of typing **C1**, use  to point to the cell. Press:



To complete the entry, press:

RETURN

After you press **RETURN**, the result appears in A1. If you want to continue the formula, you could type one of the symbols (+, -, *, /, or ^) after pointing to the cell. After you type one of these symbols or press **RETURN**, the cursor returns to the original cell and displays the coordinates of the cell to which you pointed on the edit line.



Entering Formulas

If you change the value of a referenced cell, the formula result changes as well.

Remember to type a + or (first if the formula starts with a reference to another cell. If you begin the formula with a letter, the program assumes it is a label instead of a value.

The program prevents you from entering an invalid formula. If you try to end a formula with an arithmetic operator (+, -, *, /, or ^), the program beeps and does not complete the entry. You must either delete the final symbol or enter a value or cell coordinates at the end of a formula.

If you want to use the value that is contained in another cell, but you do not want that cell referenced in the formula, proceed as follows. Point to the desired cell at the appropriate part of the formula and then type #. The crosshatch symbol (#) replaces the cell reference with the value that it contains. In this way, you can easily and accurately copy just the value (not the formula) from one cell to another. If you use this technique, changes to the value of the copied cell do not affect subsequent calculations on the current cell. That is because it only copied the value and does not continue to reference the other cell.

DISPLAYING THE RESULT OF A FORMULA

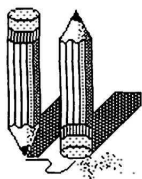
You can use the edit line as a calculator to see the result of a formula before entering it on the worksheet. To view the result of a formula, type the formula. Then, instead of pressing **RETURN**, type:

!

After you type the exclamation point, the calculated result of the formula appears on the edit line in place of the formula.

To enter the result on the worksheet, press:

RETURN



Writing and Erasing on a Worksheet

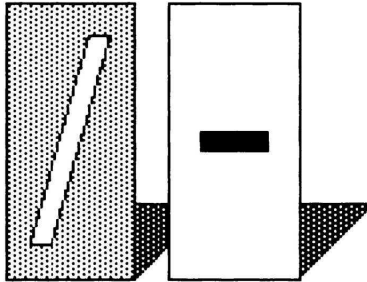
Or, to cancel the entry, press:

CTRL-C

Note:

This feature is most useful when you want to test several formulas and want to enter the value rather than the formula itself. If you type ! to view the result of a formula, you can immediately enter the resultant value. If you want to enter the formula, you must retype the formula at the desired location.

DRAWING LINES ON A WORKSHEET



REPEATING LABEL

Type character(s) to be repeated
across entire width of cell.

The Repeating Label command repeats one or more characters across the width of a cell. You can use the Repeating Label command to draw lines on a worksheet. The lines you create can contain hyphens, underscores, or any other character that you want to use.

When you use the Repeating Label command, the characters fill the cell according to the current width setting. That is, if you make the columns wider after entering a repeating label, the characters will adapt to the size of the column.

Lines can be used to distinguish headings or totals from the rest of the worksheet. Figure 2-4 shows a sample of a worksheet with lines drawn on it.



Writing and Erasing on a Worksheet

	Jan	Feb	Mar
JUN	25,000	15,000	30,000
JUL	25,000	15,000	30,000
AUG	25,000	15,000	30,000
TOTAL	65,000	45,000	90,000

Figure 2-4. Worksheet with Lines Drawn on It

HOW TO USE THE REPEATING LABEL COMMAND

To use the Repeating Label command, type:

/-

The message Label: Repeating appears in the prompt line. Then type:

-

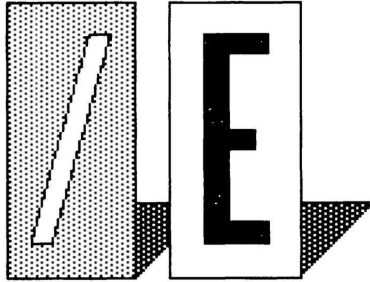
(Or whatever character or set of characters that you want repeated across the cell.) You can use any combination of symbols, letters, or numbers.

To complete the command, press:

(RETURN)

After you press **(RETURN)**, the character(s) are displayed across the width of the cell.

EDITING AN ENTRY



EDIT

Use **/E** or **CTRL-E**. Cell contents appear on edit line.

ESC Delete char to left of edit cursor.

[char] Insert char to left of edit cursor.

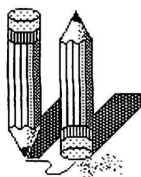
→ ← Move edit cursor; no change.

↑ Move edit cursor to beginning.

↓ Move edit cursor to end.

CTRL-T Delete from cursor to end of line.

The Edit command can be used to change values or labels that have already been entered on the worksheet. If you notice a mistake, the Edit command lets you correct the error without retyping the entire entry. The Edit command is especially useful when you are typing a long value or label and do not want to delete all the characters that were typed after an error.



Writing and Erasing on a Worksheet

HOW TO USE THE EDIT COMMAND

There are two forms of the Edit command. If you want to edit an entry but have not yet pressed **(RETURN)**, type:

(CTRL)-E

If you have already pressed **(RETURN)** or an arrow, type:

/E

After you type **(CTRL)-E** or **/E**, you can use the arrow keys to move the cursor to different positions on the edit line. Pressing **(→)** or **(←)** moves the cursor one character to the left or right. Pressing **(↑)** or **(↓)** moves the cursor to the beginning or end of the entry. Moving the cursor with the arrow keys does not affect the characters on the edit line.

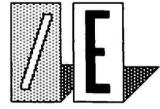
To erase a character to the left of the cursor, press **(ESC)**.

To insert a character to the left of the cursor, position the cursor and then type the desired number, letter, or symbol.

To erase all or part of an entry from the cursor to the end of the line, press **(CTRL)-I**.

To cancel the Edit command and keep the entry intact, press **(CTRL)-C**.

To complete the Edit command, press **(RETURN)**.



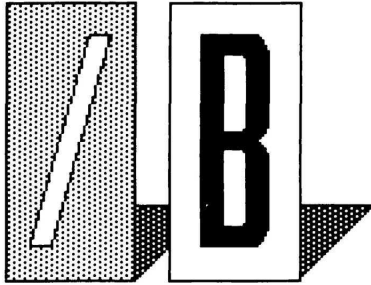
Editing an Entry

Note:

You can use the Edit command to change the content of a cell but not its classification. That is, if an entry is classified as a value, you cannot use the edit command to change it to a label. Likewise, you cannot change a label to a value with the Edit command.

For instance, if a cell contains the label Budget, you can use the Edit command to change the contents to read 2000. However, the program still considers this a label, not a value. If you want to change it to a value, retype the entry, just as if you were entering it for the first time, and press **RETURN**.

ERASING AN ENTRY



BLANK

Erase contents of cell; formats and attributes remain.

The Blank command erases an entire entry after it has been entered on the worksheet. The Blank command can be used only after you have pressed **RETURN** or an arrow to complete the entry. You can use the Blank command to erase both values and labels.

HOW TO USE THE BLANK COMMAND

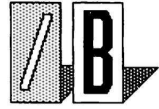
To use the Blank command, position the cursor at the cell to be erased and type:

/B

The word Blank appears in the prompt line to remind you of the command you selected. Press:

RETURN

After you press **RETURN**, the entry disappears.

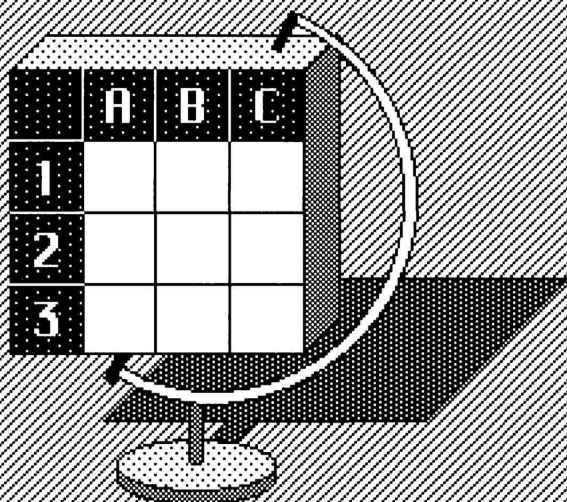


Erasing an Entry

Note:

The Blank command does not erase formats or attributes; it erases only the value or label in the cell.

If you want to erase an entire row or column, you can do so with the Delete command. See Chapter 4 for details on deleting rows and columns.

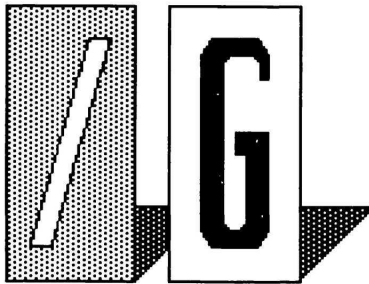


**Making Global Display
Changes**

Chapter 3 Making Global Display Changes

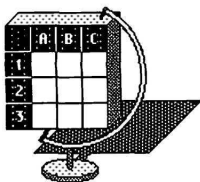
Unit 1 Overview of the Global Command	3-3
How to Use the Global Format Command	3-4
How to Use the Global Attribute Command	3-5
Unit 2 Changing Column Widths	3-6
How to Change an Individual Column's Width	3-7
Unit 3 Recalculating in Row or Column Order	3-8
Making Sure That Formulas Compute Correctly	3-9
Forward References	3-9
Circular References	3-11
Unit 4 Using Automatic or Manual Recalculation	3-12
Unit 5 Erasing the Worksheet	3-13
Unit 6 Viewing Two Windows at Once	3-14
How to Use the Window Command	3-15
Unit 7 Keeping Columns or Rows in View	3-18
How to Use the Titles Command	3-19

OVERVIEW OF THE GLOBAL COMMAND



GLOBAL

- A Assign attribute settings globally to all cells not having local attributes (see /A).
- C Column width
 - [Int(1-80)] Set width of column with cursor.
- C Set columns not having single column setting to typed number (0-80).
- O Order of recalculation
 - R By rows (A1 to BK1, A2 to BK2, ...).
 - C By columns (A1 to A254, B1 to B254, ...).
- R Recalculation
 - A Automatic—recalculates after every entry.
 - M Manual—recalculates when ! is pressed.
- F Format all cells not having individual format settings (see /F).



Making Global Display Changes

The Global commands make changes that affect the entire display. For example, you may want all values displayed with two decimal places. Or you may want to center all entries in their cells.

HOW TO USE THE GLOBAL FORMAT COMMAND

The Global command begins when you type **/G**. The prompt line then displays: Global: C O R F A. Each letter stands for a different command option:

Character

C (Column Width)

O (Recalculation Order)

R (Recalculation Mode:
Automatic, Manual)

F Format

A Attribute

Explanation

Assigns a column-width that is used by all columns on the worksheet. The suboption (/GCC) sets the width of just a single column.

Changes the direction (order) that formulas on the worksheet are calculated, either Row or Column.

Controls under what circumstances that recalculations of the worksheet occur. This can be automatically (A)—each time you make a worksheet entry, or manually (M)—only when you press the recalculation key (the exclamation point).

Sets the format of every cell on the worksheet that does not already have a local format.

Sets the specified attributes to each cell on the worksheet that does not already have a local attribute.



Overview of the Global Command

All of these options are explained in this chapter.

The Global format command allows you to assign a format to every cell on the worksheet that does not have a local format. (See Chapter 6, Unit 1 for more information on the differences between local and global formats.) The global formats are identical to the local formats available with the Format command. In addition, if the screen is split into two windows, each window can have a different global format.

Type **/GF** to assign global formats. The prompt line then displays: Format: 0-6 D G I L R C \$ *. Each character stands for a different format option. These options are detailed in Chapter 6, Unit 2. Typing the letter of the option indicates which format option you want.

HOW TO USE THE GLOBAL ATTRIBUTE COMMAND

The Attribute option assigns specified attributes to any cells on the worksheet that have no local attributes. The Global attributes that can be assigned are identical to the attributes available with the Attribute command.

Type **/GA** to assign a global attribute. The prompt line then displays: Attribute: D A L V , E P ; H. Each character stands for an option of the Attribute command (/A). These options are described in Chapter 6, Unit 3. Typing the corresponding letter indicates that you want that attribute option to be in effect on the entire worksheet (except for cells with local attributes assigned.)

CHANGING COLUMN WIDTHS

You use the Column width option of the Global command to change the startup column width setting of nine characters to be as narrow as one character or as wide as 80 characters.

Type **/G** to begin to change the worksheet's column widths. When the prompt line displays **C O R F A**, type **C**. Then the prompt line displays: Column width: 1-80 D C (9). Type the number of characters (a whole number) that you want the column width to be, followed by **(RETURN)**. This changes the width of all the columns on the worksheet to that size. For example, typing **/GC12** changes all columns to 12 characters wide.

Setting single column widths is described later in this unit.

Some things to remember about changing column widths:

- Labels longer than the column width are truncated. The label is only displayed with as many characters as the column width will allow.
- Two-character column headings, such as AB and DD, do not display above the respective columns with widths of one character. The specific column letters are on the entry line, however, so you always know which column the cursor is in.
- Decimal values are rounded as necessary to fit in the cell.
- Scientific notation is used to display a value if this allows greater precision.
- ">" signs are used to fill any cell containing a number that is too large to be displayed.

Values and labels are unchanged in memory, no matter how they are displayed. The entry line shows the original value or label at the cursor location, regardless of how it is displayed.



HOW TO CHANGE AN INDIVIDUAL COLUMN'S WIDTH

Single column widths may range from 0 to 80 characters and are set with the Single Column Width option. Each column on a worksheet may display a different width. The global default width is used in any cell which does not have an individual width specified.

Move the cursor to the desired column and type **/G** to begin changing its width. Type **C** when the prompt line displays:

Global: C O R F A.

Next the prompt line displays:

Column width: 1-80 D C (9).

Again type **C**. Lastly, the prompt line displays: Column width: 0-80 D (9), where D stands for Default. Type in your desired column width (a whole number) and then press **(RETURN)**.

To reset an individual column width to the current global default, move the cursor to any cell in the column and type **/GCCD**. If an individual column width is zero, use the Go To key sequence (**>**) to move to any cell in that column. Then type in the new column width in response to the **/GCC** prompt.

RECALCULATING IN ROW OR COLUMN ORDER

When you first load the program, calculation order is by columns. This means that recalculation begins in Column A, and recalculates each cell in that column from the top of the worksheet to the bottom. It then begins at the top of Column B and works down, and so forth until the entire worksheet has been recalculated. With the Global recalculate order command, you can change the order of recalculation from Column (C) to Row (R) order. You should review the position of the formulas on your worksheet before doing this. (See "Making Sure that Formulas Compute Correctly" later on in this unit.) Of course, if you do change the order from column to row, you can change it back to column using the same commands.

Begin the command by typing **/GO**. The following prompt:
Reeval Order: R C is displayed. These options are:

- R Sets row order of recalculation (A1 to BK1, then A2 to BK2, and so on.)
- C Sets column order of recalculation (A1 to A254, B1 to B254, and so on.)

Type **R** or **C** to select the recalculation order. (Typing **/CY** to clear the worksheet also resets the order of recalculation to the default setting, which is Column order. The first letter in the upper-right corner of the screen indicates row or column order (R or C). The second letter indicates whether automatic or manual recalculation—A or M—has been selected.)



MAKING SURE THAT FORMULAS COMPUTE CORRECTLY

When you set up a worksheet that is in column order recalculation (the default), you should be sure that all formulas with references to other cells are located so that they are calculated after the referenced cells are calculated. This means that the formula should refer only to cells in columns to the left or to cells above in the same column.

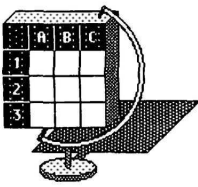
If you decide to change the order of recalculation to row order, you must be careful that formulas do not contain a *forward reference*. In row order, this means formulas should refer to cells in rows above or cells in the same row to the left of the formula.

Forward References

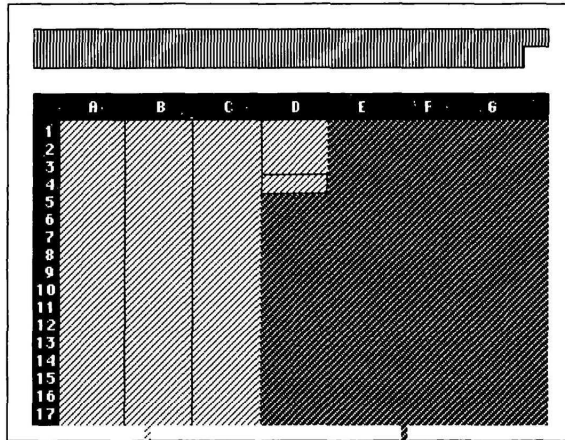
Forward references are references in formulas to cells that follow (are calculated after) the cell containing the formula. You should not reference any cells that will not be calculated before the formula in which they are referenced.

For example, suppose you have a formula in A10 that refers to values in A4 and B4. If the recalculation order is Column order, the program will calculate the formula in A10 using the number in B4 *before* it has been recalculated. This could cause incorrect results.

Forward references are frequent when column totals are placed at the top or left-hand side of the page. Forward reference conditions are illustrated in Figure 3-1.

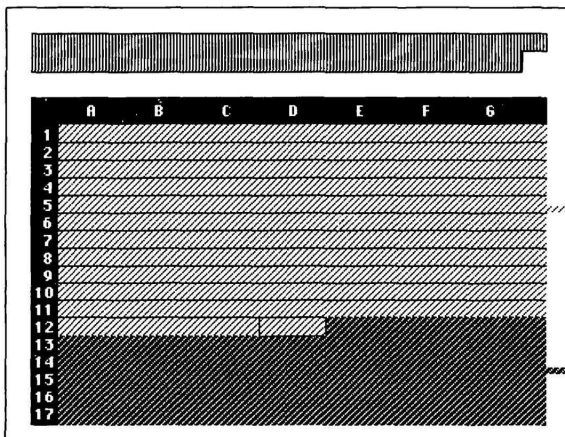


Making Global Display Changes



references to these
cells are safe

references to these
cells create a
forward reference



references
to these
cells are
safe

references
to these
cells create
a forward
reference

Figure 3-1. Forward References by Row and by Column



Recalculating in Row or Column Order

Diagnosing forward references is often difficult. When you suspect the worksheet contains a forward reference, type **!**. This forces another recalculation of the worksheet. As you type the exclamation point, watch the cell whose value is incorrect. If its value changes, look for forward references. You should redesign the worksheet to eliminate them. Otherwise, several forced recalculations may be required to produce a correct result if there are forward references.

Circular References

A *circular reference* is any formula that refers to itself (such as $1 + A1$ in cell A1), or ties a series of references back in a circle (such as $1 + B1$ in cell A1, and $1 + A1$ in B1). Each time the worksheet is recalculated, the value of each of these formulas changes even when no other change is made to the worksheet.

These references are easy to identify, but often very difficult to repair if you use complex formulas that include references to cells that in turn use references to other cells. Simply mistyping a cell reference can cause a circular reference.

A common instance of this kind of problem is using the **@SUM** function on a range that includes the cell containing the **@SUM** function. For example, if you put **@SUM(A1...A9)** in cell A9, the value will change every time the worksheet is recalculated. If you find values changing unpredictably when you recalculate, check for circular references.

USING AUTOMATIC OR MANUAL RECALCULATION

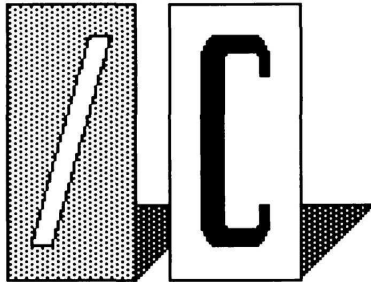
Sometimes you may have lengthy or time-consuming formulas and a recalculation of your worksheet may take several seconds. You can use an option of the Global command (/GR) to control when recalculation occurs. The command /GRM switches the worksheet to Manual Recalculation Mode. Recalculation does not occur automatically after each entry in this mode, only after you press the exclamation point (!).

Type **/GR** to begin selecting the Manual Recalculation Mode. The prompt line then reads: Recalc: A M. Your options are:

- A For Automatic Recalculation Mode. The worksheet is recalculated when you enter a new value. This mode is the default when you load the program or clear the sheet with /CY.
- M For Manual Recalculation Mode. The worksheet is only recalculated when you type !.

Type **M** to select Manual recalculation. Type **!** whenever you want the worksheet recalculated. Typing **/GRA** restores Automatic recalculation.

ERASING THE WORKSHEET



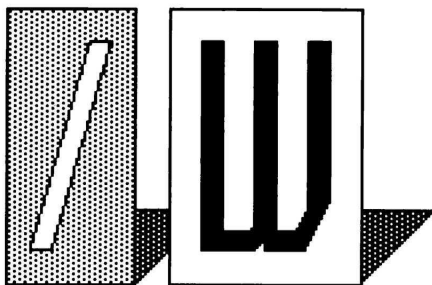
CLEAR

Erase entire worksheet. Type Y to confirm.

You should always use the Clear command before starting a new worksheet or loading a saved worksheet. The Clear command clears your screen of all entries, formats, and attributes. Be very careful using the Clear command because it irretrievably erases all of the worksheet. Save any worksheet you want to keep before you use the Clear command. (See Chapter 7 for instructions on how to save or load a worksheet.)

Type **/C** to begin the Clear command. The prompt line then displays: Clear: Type Y to confirm. If you type Y, the status area and the screen clear and the cursor is positioned at A1. The Clear command is cancelled if you type anything other than Y.

VIEWING TWO WINDOWS AT ONCE

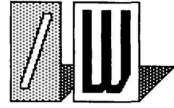


WINDOW

Place cursor on row or column to contain window border.

- H** Horizontal—create window at row with cursor.
- V** Vertical—create window at column with cursor.
- 1** Return to one window, displaying window with cursor.
- S** Synchronize—windows scroll together.
- U** Unsynchronized—windows scroll independently.

Your screen is usually a single view of a larger worksheet. This view can be changed by scrolling the window around with the cursor when you want to see another part of the worksheet. You can add a second, simultaneous view of another part of the worksheet by using the Window command.



HOW TO USE THE WINDOW COMMAND

You can use the Window command when you want to view rows or columns that are too far apart to be viewed through a single window. The Window command (/W) then splits the screen vertically or horizontally creating two new windows, each able to view different parts of the worksheet at once.

Any FlashCalc command can be entered in either window, and will effect both windows, with the following exceptions:

- Column-width (both single and global)
- Global Format commands

To start the Window command, type **/W**. The prompt line then displays:

Window: H V 1 S U

Character

Explanation

H (Horizontal)

Opens a second horizontal window at the cell where the cursor is located.

V (Vertical)

Opens a second vertical window at the cell where the cursor is located.

1 (One Window)

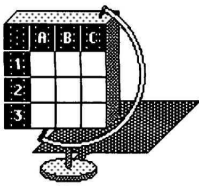
Removes any second window. The window you had the cursor in when you selected /W1 becomes the one window.

S (Synchronize)

Causes the two windows to scroll together. For instance, if you were to scroll down one vertically split window with the windows synchronized, the other window scrolls at the same time.

U (Un synchronize)

Turns off the synchronized scrolling command.



Making Global Display Changes

Figures 3-2 and 3-3 illustrate the use of Horizontal and Vertical windows.

	A	B	C	D	E	F	G
1		January	February	March	April	May	June
2	San Juan	55.77	72.56	81.29	102.51	122.56	142.56
3	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56
4	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56
5	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56
6	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56
7	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56
8	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56
9	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56
10	Sancti Spiritus	45.77	62.56	71.29	92.51	112.56	132.56

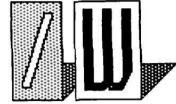
	D	E	F	G	H	I	J
1	March	April	May	June	July	August	September
2	55.77	72.56	81.29	102.51	122.56	142.56	162.56
3	45.77	62.56	71.29	92.51	112.56	132.56	152.56
4	45.77	62.56	71.29	92.51	112.56	132.56	152.56
5	45.77	62.56	71.29	92.51	112.56	132.56	152.56
6	45.77	62.56	71.29	92.51	112.56	132.56	152.56
7	45.77	62.56	71.29	92.51	112.56	132.56	152.56
8	45.77	62.56	71.29	92.51	112.56	132.56	152.56
9	45.77	62.56	71.29	92.51	112.56	132.56	152.56
10	45.77	62.56	71.29	92.51	112.56	132.56	152.56

Figure 3-2. Horizontal Windows

The semi-colon key (;) is used to move from one window to another. If you are in one window, and want to work in the other window, pressing ; places your cursor in the alternate window.

Remember, when using windows:

- The screen can be split into two windows only when one window is displayed (you can't change directly from horizontal windows to vertical windows or vice versa).
- The size of each window is determined by the cursor's position at the time the Window command is given. The window dividing line is placed just above or to the left of the cursor.
- Each window can have a different Global format.



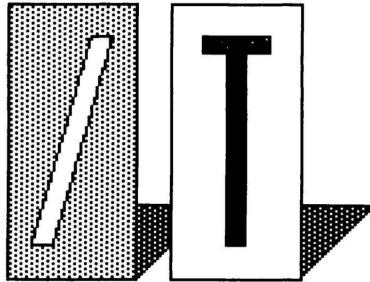
Viewing Two Windows at Once

	A	B	F	G	H	I	J
1			May	June	July	August	September
2	San Juan	1	2	3	4	5	6
3	Santa Fe	7	8	9	10	11	12
4	Puerto Rico	13	14	15	16	17	18
5	San Juan	19	20	21	22	23	24
6	Santa Fe	25	26	27	28	29	30
7	Puerto Rico	31					
8	San Juan						
9	Santa Fe						
10	Puerto Rico						
11	San Juan						
12	Santa Fe						
13	Puerto Rico						
14	San Juan						
15	Santa Fe						
16	Puerto Rico						
17	San Juan						
18	Santa Fe						
19	Puerto Rico						
20	San Juan						
21	Santa Fe						
22	Puerto Rico						
23	San Juan						
24	Santa Fe						
25	Puerto Rico						
26	San Juan						
27	Santa Fe						
28	Puerto Rico						
29	San Juan						
30	Santa Fe						
31	Puerto Rico						

Figure 3-3. Vertical Windows

- /WH will not work when the cursor is in the first or the last row visible on the screen.
- /WV will not work when the cursor is in Column A.
- When the one window (/W1) command is used to change from a two window state to a one window state, the global format and column width settings of the window that contains the cursor are used for the new single window.
- The /W1, /WS, and /WU options cause no action unless there is more than one window currently displayed.

KEEPING COLUMNS OR ROWS IN VIEW

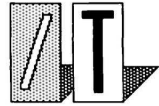


TITLES

- H** Horizontal—freeze row with cursor and above.
- V** Vertical—freeze column with cursor and to left.
- B** Both—freeze both rows and columns.
- N** None—remove all titles.

The Titles command fixes rows and columns to a specific area of your screen. These rows or columns then remain in view as the window scrolls over the worksheet. This lets you see entries in Row 100, for instance, with the column headings that pertain still displayed at the top of the screen.

The position of the cursor before you type the Titles command determines which rows and/or columns will be fixed. The row and/or column that contains the cursor, and any row(s) and/or column(s) to the left and/or above are fixed when the Titles command is given.



HOW TO USE THE TITLES COMMAND

Type **/T** to begin the Titles command. The prompt line then displays: Titles: H V B N. These options are:

Character	Explanation
H (Horizontal)	Horizontal titles are fixed.
V (Vertical)	Vertical titles are fixed.
B (Both)	Both horizontal and vertical titles are fixed.
N (None)	No titles are fixed. This command cancels all title fixing on the worksheet.

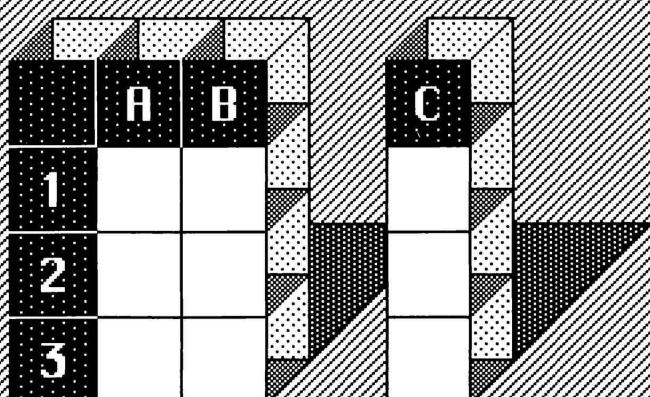
The effect of fixing titles becomes apparent when the worksheet is scrolled in the window. Columns and rows that are not fixed move across the screen, but the fixed titles remain in view. Fixed titles do not move.

You must use the Go To (>) key sequence to move to a cell in a fixed-title row or column. The arrow keys cannot be used to move the cursor into a fixed-title row or column.

The program will cancel the fixed vertical titles settings if the column width is increased so that only one column can be displayed.

The None option (/TN) cancels all fixed titles on the worksheet. The cursor can be anywhere on the screen when the command is entered.



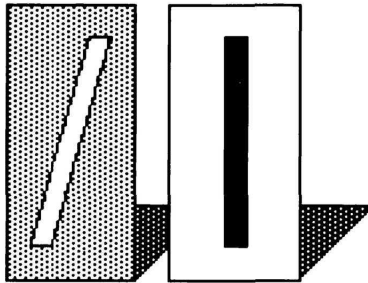


**Positioning Rows
and Columns**

Chapter 4 Positioning Rows and Columns

Unit 1 Inserting a Blank Row or Column	4-3
How to Use the Insert Command	4-4
Unit 2 Deleting a Row or Column	4-6
How to Use the Delete Command	4-7
Unit 3 Moving a Row or Column	4-9
How to Use the Move Command	4-10
Indicating Where to Move "To"	4-10

INSERTING A BLANK ROW OR COLUMN



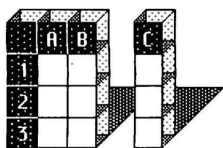
INSERT

- R Insert a row above the row that contains the cursor.
- C Insert a column to the left of the column that contains the cursor.

If you need to add space on the worksheet, you can insert a blank row or column. This creates room to add entries, or just to improve the appearance of the worksheet.

You must insert an entire row or column; you cannot insert just one or several cells. When you insert a row, all rows from the cursor's row and below move down on the worksheet. When you insert a column, the column containing the cursor and all columns to the right move to the right.

You don't have to worry about the accuracy of existing formulas within the worksheet when you insert rows or columns. The FlashCalc™ program automatically adjusts all cell references and ranges to compensate for the added row or column.



Positioning Rows and Columns

For instance, if a formula refers to cell D5 and you insert a row above row 5, the coordinates in the formula are changed to D6. If the range in a function formula is D1...D5, the range is adjusted to D1...D6.

HOW TO USE THE INSERT COMMAND

Begin by moving the cursor to where you want the row or column inserted. The row or column that contains the cursor will be moved down or to the right to make room for the new row or column. Then, type:

//

Insert: R C appears in the prompt line. Type:

R (to insert a row)

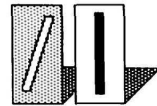
or

C (to insert a column)

The first screen in Figure 4-1 shows the position of the cursor before inserting a column; the second screen shows the result of inserting a column.

You cannot insert a row if any cell in row 254 contains an entry. Also, you cannot insert a column if column BK contains an entry. In both of those cases, you already have data at the limit of the worksheet that prevents rows or columns from moving to make room.

To make an insertion, you need to erase those cells (with the Blank command), erase the row or column (with the Delete command), or move the row or column (with the Move command). Your worksheet appears to have room now, but first you need to save the altered worksheet, clear the screen, and reload the worksheet. Saving, clearing, and reloading frees up the memory to allow you to insert a row or column.



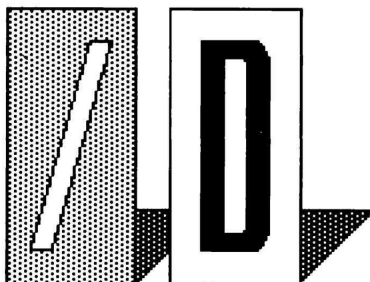
Inserting a Blank Row or Column

	A	B	C	D	E	F	G	H	I	J
1		SUN	TUE	WED	THURS	FRI	SAT	TOTAL		
2										
3		GASOLINE								
4		BREAKFAST								
5		LUNCH								
6		DINNER								
7		LAUNDRY								
8		ENTERTAINMENT								
9		OTHER								
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

	A	B	C	D	E	F	G	H	I	J
1		SUN	TUE	WED	THURS	FRI	SAT	TOTAL		
2										
3		GASOLINE								
4		BREAKFAST								
5		LUNCH								
6		DINNER								
7		LAUNDRY								
8		ENTERTAINMENT								
9		OTHER								
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

Figure 4-1. Inserting a Column

DELETING A ROW OR COLUMN



DELETE

- R Delete the row that contains the cursor.
- C Delete the column that contains the cursor.

Deleting a row or column is a quick way to erase large parts of the worksheet. You should use the Delete command with care, because the *entire* row or column is always *permanently erased*.

When you delete a row or column, other rows or columns move up or left to fill up the gap.

As with the Insert command, the FlashCalc program adjusts formulas that refer to cells that are moved as a result of using the Delete command. If a formula refers to a cell in the row or column that was deleted; however, the formula displays **ERROR**.



HOW TO USE THE DELETE COMMAND

Begin by moving the cursor to any cell in the row or column you want to delete. Then, type:

/D

Delete: R C appears in the prompt line. Type:

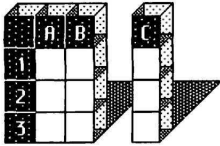
R (to delete a row)

or

C (to delete a column)

Figure 4-2 shows the position of the cursor before deleting a row; then it shows the result of the deletion.

If you are working with such a large worksheet that the memory indicator is low, you may need to use the Delete command to allow room for more data. If the program beeps and doesn't allow you to make new entries even after you have deleted information, you need to make more memory available. To do this, first save the altered worksheet, clear the screen, and reload the worksheet.



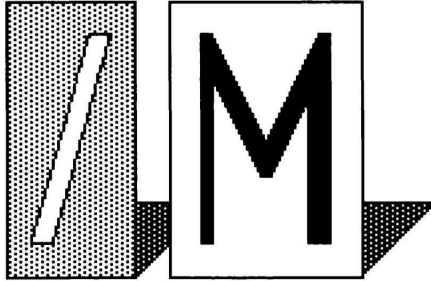
Positioning Rows and Columns

08	CA										08
	A	B	C	D	E	F	G	H	I	J	
1	-----										
2	GASOLINE										
3	GASOLINE										
4	GASOLINE										
5	GASOLINE										
6	GASOLINE										
7	GASOLINE										
8	GASOLINE										
9	GASOLINE										
10	GASOLINE										
11	GASOLINE										
12	GASOLINE										
13	GASOLINE										
14	GASOLINE										
15	GASOLINE										
16	GASOLINE										
17	GASOLINE										
18	GASOLINE										
19	GASOLINE										
20	GASOLINE										

08	CA										08
	A	B	C	D	E	F	G	H	I	J	
1	-----										
2	GASOLINE										
3	GASOLINE										
4	GASOLINE										
5	GASOLINE										
6	GASOLINE										
7	GASOLINE										
8	GASOLINE										
9	GASOLINE										
10	GASOLINE										
11	GASOLINE										
12	GASOLINE										
13	GASOLINE										
14	GASOLINE										
15	GASOLINE										
16	GASOLINE										
17	GASOLINE										
18	GASOLINE										
19	GASOLINE										
20	GASOLINE										

Figure 4-2. Deleting a Row

MOVING A ROW OR COLUMN



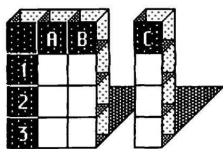
MOVE

[coord] . [coord]

Move a row if the row number changes between coordinates.
Move a column if the column letter changes. The first coordinates indicate the row or column to be moved. If moving a row, the second coordinates indicate the row that should be moved down to accommodate the new row. If moving a column, the second coordinates indicate the column to be moved right to accommodate the new column.

If you need to move the contents of a row or column to another part of the worksheet, use the Move command. You must move the entire row or column, not just several cells.

When you move a row, the existing rows are moved down to accommodate the moved row. When you move a column, existing columns move right to make room. Rows or columns move up or left to fill the gap left by the moved row or column.



Positioning Rows and Columns

As with the Insert and Delete commands, formulas throughout the worksheet that refer to moved cells are adjusted. As explained in Chapter 9, you can use many of the special FlashCalc functions to refer to ranges of cells. Be careful when you move rows or columns that are the beginning or ending limits of ranges; the range may become shorter or longer than you originally intended.

HOW TO USE THE MOVE COMMAND

Begin by moving the cursor to any cell in the row or column that contains information you want to move. Then, type:

/M

Move: From...To appears on the prompt line, and the coordinates of the cursor appear on the edit line.

Move the cursor to the row or column that you want to place the information **before**. Then, press **(RETURN)**.

Indicating Where to Move "To"

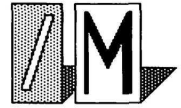
Showing where to move "To" requires some extra explanation.

Look at the example, shown in Figure 4-3, of moving a column. The example shows moving Column H (SUN) to just before Column B (MON).

Before beginning, the cursor was positioned in Column H, the column to be moved. The cursor could be anywhere in Column H; in this case, it was in Row 3. The first screen shows the result of typing **/M** and moving the cursor to the To location.

The To coordinates are in Column B (MON) because the contents of Column H should be placed **before** the contents of Column B. And because a column is being moved, the From and To coordinates must be in the same row—Row 3.

The second screen shows the column moved after **(RETURN)** was pressed.



Moving a Row or Column

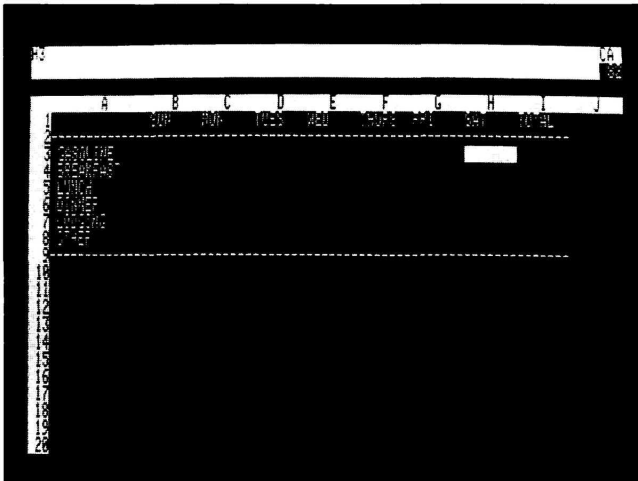
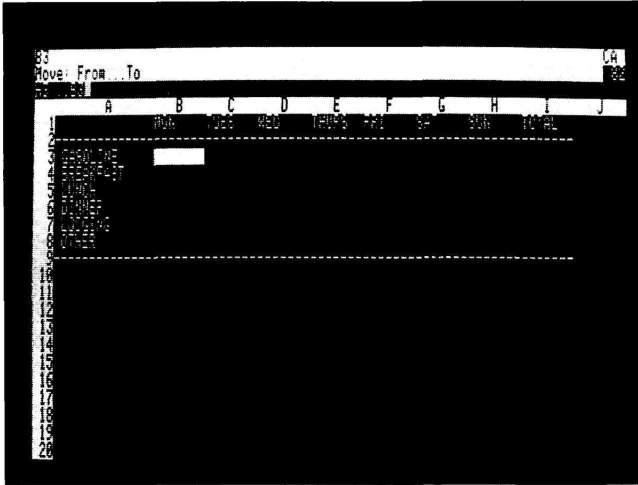
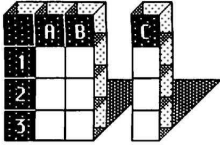


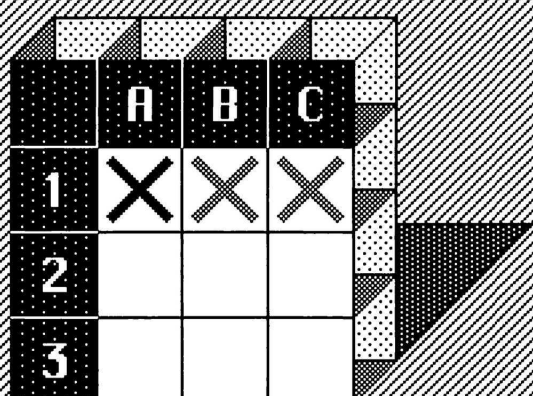
Figure 4-3. Moving a Column



Positioning Rows and Columns

Instead of moving the cursor to the To coordinates, you could also type a period (for the ellipsis) and type the To coordinates. You could also use the **(ESC)** key to erase the From coordinates immediately after typing **/M**; then you could type new coordinates. We recommend using these methods only after you have become familiar with the Move command. Using the cursor movement method is easier because:

- By moving the cursor in only one direction, you ensure that the From and To coordinates will be in the same row (if you are moving a column), or in the same column (if you are moving a row).
- It is easier to select the correct To location by moving the cursor. The cursor should highlight the information that you want to be moved right (if a column) or moved down (if a row) to accommodate the moved information.



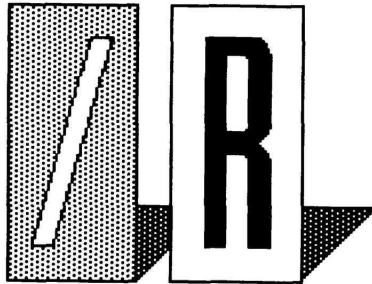
	A	B	C
1	X	X	X
2			
3			

Copying Cell Entries

Chapter 5 Copying Cell Entries

Unit 1 Overview of the Replicate Command	5-3
Source and Target Ranges	5-4
How to Use the Replicate Command	5-5
Unit 2 Copying Different Sized Areas	5-6
Copying a Single Cell	5-6
Copying a Row or a Column	5-9
Copying a Block of Cells	5-13
Unit 3 Copying Formulas	5-16
How to Choose No Change or Relative	5-16
Unit 4 Copying Selected Characteristics of Cells	5-19
How to Use the Replicate Options	5-19

OVERVIEW OF THE REPLICATE COMMAND



REPLICATE

(Limit: Type one or more options.

A Attributes only

F Formats only

N All references no change

R All references relative

V Displayed values or labels only

C Contents only

) End options

Source range In row (A1...G1) for row segment; in column (A1...A9) for column segment; upper left and lower right (A1...D9) for block.

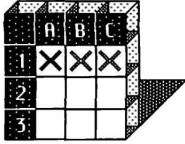
RETURN For one cell.

Target range One set of coordinates

copies once;
range copies several times.

N No change—reference is the same.

R Relative—reference relative to new position.



Copying Cell Entries

Almost every worksheet you create will contain cells whose contents need to be duplicated in other parts of the worksheet. You could always retype information, but in doing so you waste time and risk the accuracy of your data.

Copying is done in the FlashCalc™ program with the Replicate command. In the *QuickStart Course*, you learned some simple ways to use the Replicate command. This chapter shows you all of the options of the Replicate command to suit every situation.

This first unit covers the basic principles of the Replicate command. Unit 2 demonstrates how to copy various sized areas across or down the worksheet. Unit 3 teaches you how to copy formulas that contain references to other cells in the worksheet. Finally, Unit 4 shows how to copy only parts of cells; for example, only the formats (without the contents).

SOURCE AND TARGET RANGES

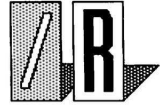
When you use the Replicate command, you need to specify two areas of the worksheet:

- The area to copy **from** (the *Source range*).
- The area to copy **to** (the *Target range*).

Each of these ranges can be:

- One cell.
- A group of adjacent cells, all in one row, or all in one column.
- A block of cells that form a rectangular area.

The information in the Source range **erases and writes over** what was previously residing in the Target range. So, you need to know how to specify the Target range before you use the Replicate command on valuable worksheets. This is explained in detail in Unit 2.



A good rule is:

Before you use the Replicate command, **save the worksheet**. Saving is explained in Chapter 7. If the copying process writes over information you wanted, you can always clear the screen and load the saved worksheet.

HOW TO USE THE REPLICATE COMMAND

Move the cursor to the beginning of the area of cells you want to copy. Then type:

/R

Replicate: (, Source range or RETURN appears in the prompt line. The coordinates of the cell that contains the cursor appear in the edit line. Here's a summary of what you can do next, and in what order:

1. Type (, which lets you select special options of the Replicate command. This is an optional step, but if you are going to choose it, you do it now. These options are explained in Unit 4.
2. Indicate the Source range. This depends on the size of the area you are copying; see Unit 2.
3. Specify the Target range. This is also explained in Unit 2.
4. Press **(RETURN)** to complete the command.
5. If there are cell references in any of the formulas in the Source range, the program prompts you to choose between copying Relative or No Change. Type **R** or **N** for each reference. Choosing between No Change and Relative is explained in Unit 3.

COPYING DIFFERENT SIZED AREAS

As explained in Unit 1, you can copy a single cell at a time, or you can copy groups of cells. The number of cells you copy is determined by what you enter for the Source range. Your entry for the Target range specifies how many copies to make and where to write them on the worksheet.

For instance, if the Source range is one cell, the Target range determines how many times that cell will be copied. If the Source range is two rows, the Target range determines how many times the two rows will be copied.

You cannot choose to copy the Source range one and a half times, for instance; you must copy the range once, twice, or an integer number of times.

The following sections tell you what to enter for the Source and Target ranges if you want to copy various sized areas. The Figures in this unit show different sized areas already copied. We have retyped the entry for the Replicate command to show you what the Source and Target ranges would look like on the edit line.

COPYING A SINGLE CELL

You need to enter just one cell for the Source range, and a range of cells to correspond to as many copies as you want for the Target range.

Move the cursor to the cell that you want to copy. Then type:

/R

Replicate: (, Source range or RETURN tells you to enter the Source range. The cursor's coordinates appear on the edit line. Press:

RETURN

This puts a colon after the coordinates on the edit line, signifying the end of the Source range, which is a single cell. Now the prompt line asks you for the Target range.



Copying Different Sized Areas

To make one copy of the cell, type (or move the cursor to) the coordinates of the target cell, as shown in Figure 5-1. Press **(RETURN)** to make the copy.

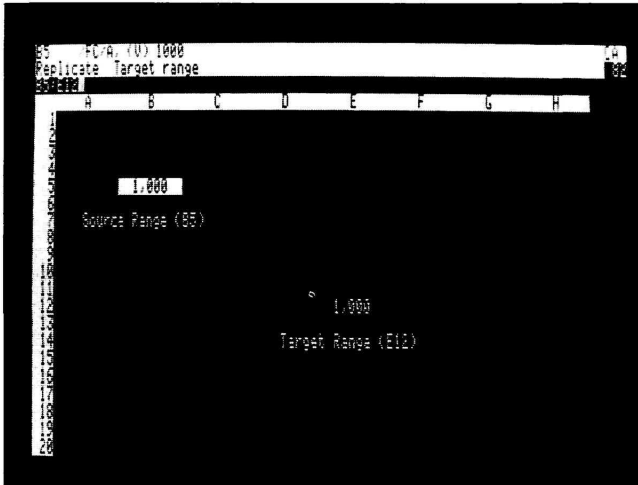


Figure 5-1. Making One Copy of a Single Cell

To make several copies, type a range of cells in a row and press **(RETURN)**, as shown in Figure 5-2, or type a range of cells in a column and press **(RETURN)**, as shown in Figure 5-3.

	A	B	C
1	X	X	X
2			
3			

Copying Cell Entries

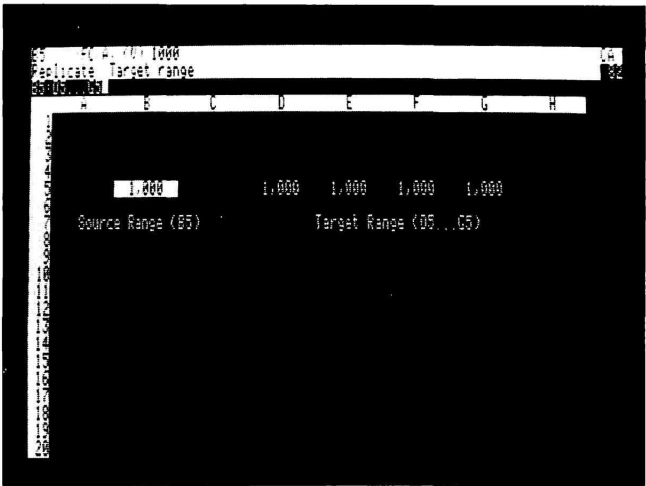


Figure 5-2. Copying a Cell across a Row

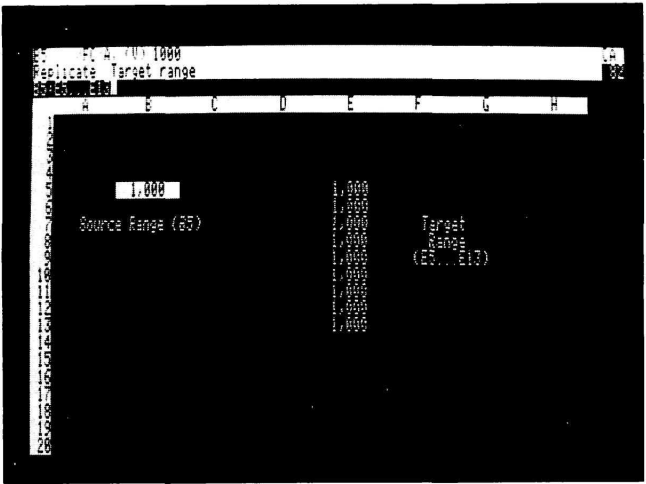


Figure 5-3. Copying a Cell down a Column



COPYING A ROW OR A COLUMN

Enter several cells in a row or column for the Source range, and enter a range of cells to correspond to as many copies as you want for the Target range.


Note:

You cannot use the Replicate command to copy a column into a row or a row into a column. If you want to change the orientation of rows or columns, use the DIF Order option in the Storage menu. See Chapter 7, Unit 4 for instructions.


Move the cursor to the upper-left cell in the range of cells that you want to copy. Then type:

/R

Replicate: (, Source range or RETURN tells you to enter the Source range. The cursor's coordinates appear on the edit line. Press:

 as many times as necessary to move the cursor to the end of a row range

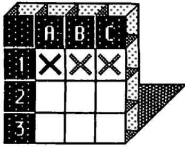
OR

 as many times as necessary to move the cursor to the end of a column range

The program assumes the cursor's original coordinates are the beginning of the range. The coordinates of the ending of the range change as you move the cursor. When you are satisfied with the Source range, press:

RETURN

This puts a colon after the coordinates on the edit line, signifying the end of the Source range. Now the prompt line asks you for the Target range.



Copying Cell Entries

To make one copy of a column, type the coordinates of the cell where you want the top of the column to be placed, as shown in Figure 5-4. Press **RETURN** to make the copy.

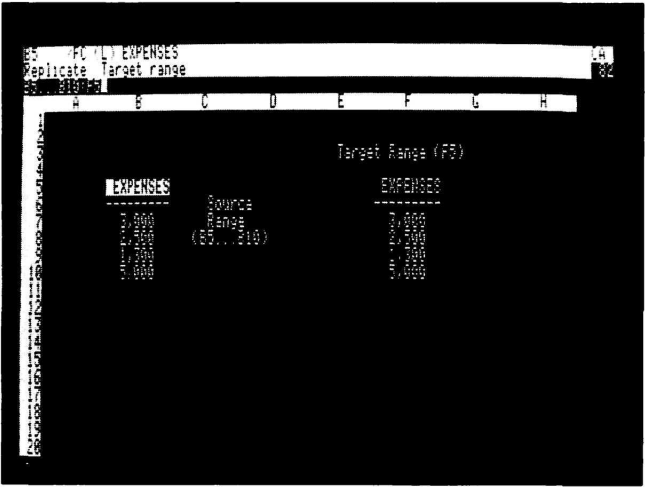
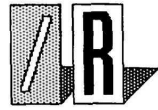


Figure 5-4. Making One Copy of a Column



Copying Different Sized Areas

To make more than one copy of a column, enter a range instead of just one cell for the Target range. Type as the beginning and ending coordinates the cells where you want the tops of the first and last columns to be placed. Press **RETURN** to make the copies. Figure 5-5 shows an example of this.

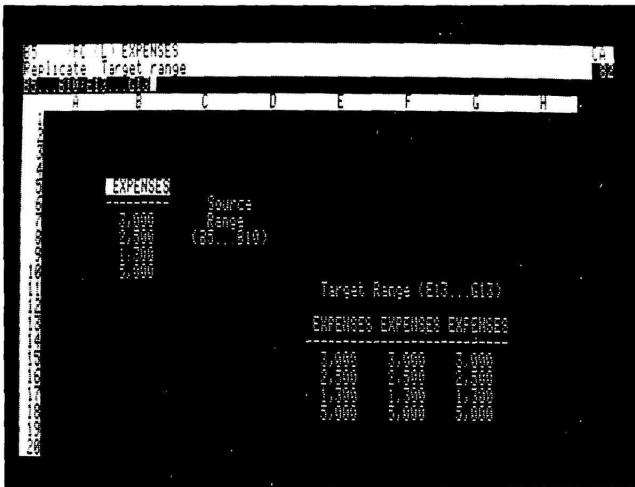


Figure 5-5. Making Several Copies of a Column

	A	B	C
1	X	X	X
2			
3			

Copying Cell Entries

To make one copy of a row, type the coordinates of the cell where you want the leftmost cell of the row to be placed, as shown in Figure 5-6. Press **RETURN** to make the copy.

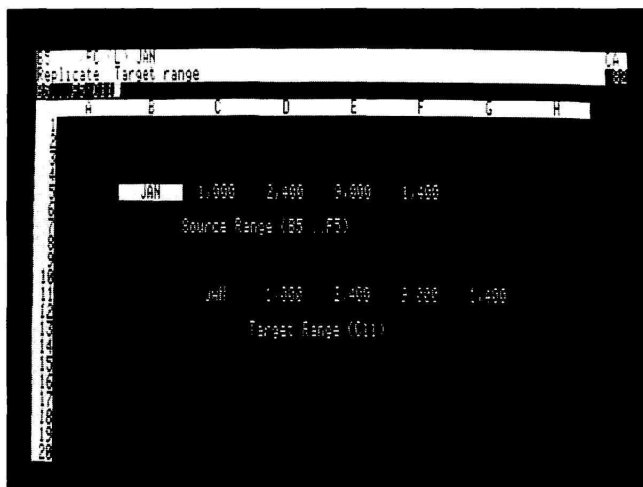


Figure 5-6. Making One Copy of a Row

To make more than one copy of a row, enter a range instead of just one cell for the Target range. Type as the beginning and ending coordinates the cells where you want the leftmost cells of the first and last rows to be placed. Press **RETURN** to make the copies. See the example in Figure 5-7.



Copying Different Sized Areas



Figure 5-7. Making Several Copies of a Row

COPYING A BLOCK OF CELLS

Define the area of the block by entering the upper-left and lower-right corners for the beginning and ending cells of the Source range. The number of copies you make is determined by your entry for the Target range.

Move the cursor to the upper-left cell of the area of cells that you want to copy. Then type:

/R

Replicate: (, Source range or RETURN tells you to enter the Source range. The cursor's coordinates appear on the edit line. Press:

(→) and/or **(↓)** as many times as necessary to move the cursor to the lower-right corner of the block

	A	B	C
1	X	X	X
2			
3			

Copying Cell Entries

The program assumes the cursor's original coordinates are the beginning of the range. The coordinates of the ending of the range change as you move the cursor. When you are satisfied with the Source range, press

(RETURN)

This puts a colon after the coordinates on the edit line, signifying the end of the Source range. Now the prompt line asks you for the Target range.

To make one copy of a block, type the coordinates of the cell where you want the upper-left corner of the block to be placed, as shown in Figure 5-8. Press **(RETURN)** to make the copy.

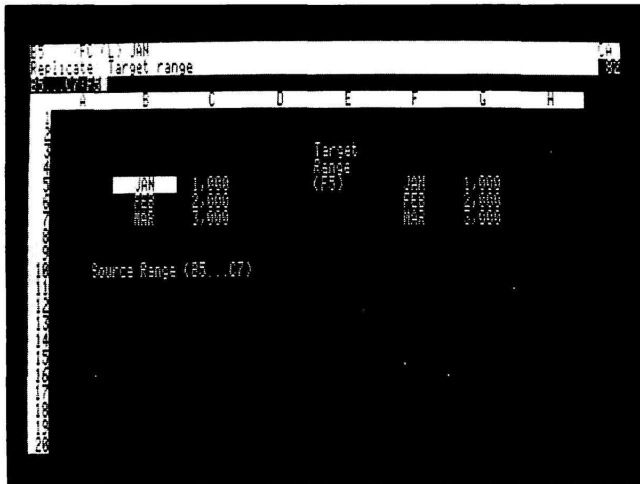


Figure 5-8. Making One Copy of a Block



Copying Different Sized Areas

To make more than one copy of a block, enter a range instead of just one cell for the Target range. To copy blocks across the worksheet, type the ending coordinates in the same row as the beginning coordinates. To copy blocks down the worksheet, as shown in Figure 5-9, type ending coordinates in the same column as the beginning coordinates.

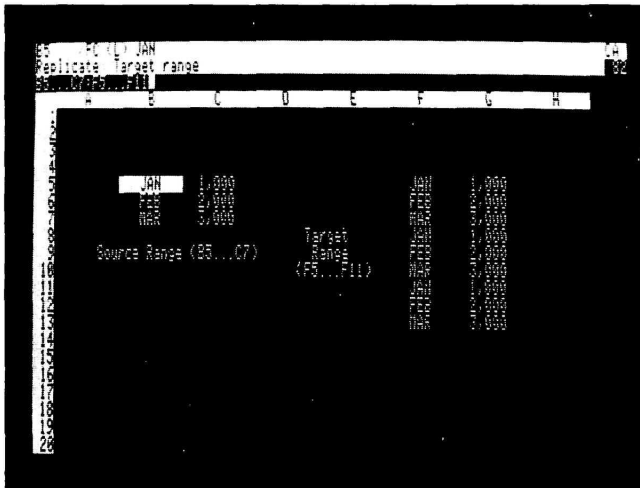


Figure 5-9. Making Several Copies of a Block

You always copy the block an integer number of times; you cannot copy a portion of the block. For instance, entering (F5...F12) or (F5...F13) would produce the same result as entering (F5...F11) for the Target range in Figure 5-9.

COPYING FORMULAS

Most of the formulas you use with the FlashCalc program contain references to other cells on the worksheet. When you copy a formula that refers to another cell, you may want the references in the new copy of the formula to be modified. You can choose to change the references according to the new location of the copied formula.

For instance, assume you have a formula in cell A11 that totals the values in Column A: @SUM(A1...A10). Assume also that you have values in Columns B through G that you want to total also. You need the same formula, except the range of cells it should total should be B1 through B10 in Column B, C1 through C10 in Column C, and so on. In this case, you would want to copy the cell references relative to the new position of the formula.

Copying *Relative* to the new position means that, if the cell you are copying to is one cell to the right of the cell you are copying from, the references in the formula will also be shifted one cell to the right. So, in the above example, if you copied the formula in cell A11 to cell B11, copying *Relative* would change the formula from @SUM(A1...A10) to @SUM(B1...B10).

HOW TO CHOOSE NO CHANGE OR RELATIVE

After you begin the Replicate command and enter the Source range and the Target range, you press **RETURN** to complete the command. If there are any cell references in any of the formulas in the Source range, the program stops copying. The prompt Replicate: N=No change, R=Relative appears and the formula in question appears in the edit line. The edit cursor blinks over the first cell reference. Type:

N (to copy the reference with no change)

OR

R (to copy the reference relative)



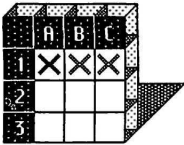
Copying Formulas

The program prompts you in the same way for each cell reference in the formulas in the Source range. Type **N** or **R** for each reference. When the edit line clears, you are finished copying.

Figure 5-10 shows another example of copying a formula. The formula that calculates the Balance in cell G6 takes the previous balance from the row above (G5) and adds any deposit made in that row (F6), then subtracts any check written in that row (E6). To copy that formula down Column G, you would want each cell reference to be shifted down the worksheet as the location of the formula is shifted down. So, each reference should be copied Relative.

Date	Check #	Description	Amt. of Check	Amt. of Deposit	Balance
		Opening Balance			1,200.00
5-30		IRS Refund		500.00	1,700.00
6-1	101	Insurance	100.00		

Figure 5-10. Choosing between Relative and No Change



Copying Cell Entries

Some things to remember as you copy formulas:

- If after replicating Relative, the program displays ERROR in cells in the Target range, you may have copied invalid references. If the source formula refers to a cell that is two cells to the left, and if you copy this formula to cell A1, the reference would be off the worksheet.
- Do not create forward or circular references. You could create a forward reference if the Target range is to the left of the Source range while the worksheet is recalculated in Column order, or if the Target range is above the Source range while recalculation is in Row order. A circular reference could be created if the Target range includes one of the cells referenced in a formula in the Source range. See Chapter 3, Unit 3 for more details on recalculation order.
- If you know before you begin the Replicate command that you want to copy all references Relative, or all references with No change, you can use the N or R options of the Replicate command. This will save you the time of typing **N** or **R** repeatedly as you copy. See Unit 4 in this chapter for instructions on using the Replicate options.

COPYING SELECTED CHARACTERISTICS OF CELLS

The Replicate limit options let you change the way cells are copied. You can choose to copy only the display attributes in cells, for instance, without copying their contents. Other limit options let you choose to copy all references in a formula No change or Relative. You can use the options alone or in combination to limit which characteristics of cells will be copied.

HOW TO USE THE REPLICATE OPTIONS

Move the cursor to the beginning of the area of cells you want to copy. Then type:

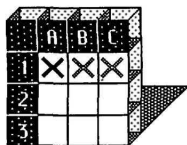
/R

Replicate: (, Source range or RETURN appears in the prompt line. Type:

(

Limit: A F N R V C) appears in the prompt line. Your choices are as follows:

Option	What it Copies from Each Cell
A	Attribute only; the data entered in the cell is not copied.
F	Format only; the data entered in the cell is not copied.
N	All cell references in a formula with No change.
R	All cell references in a formula Relative to their new position.
V	Value or label only; the value that results from a formula is copied, not the formula that calculates it.
C	Contents only; any attribute or format assigned to the cell is not replicated.
)	Signal the end of the limit option(s); the program then prompts you to enter the Source range. Instead of typing), you could press <u>RETURN</u> .



Copying Cell Entries

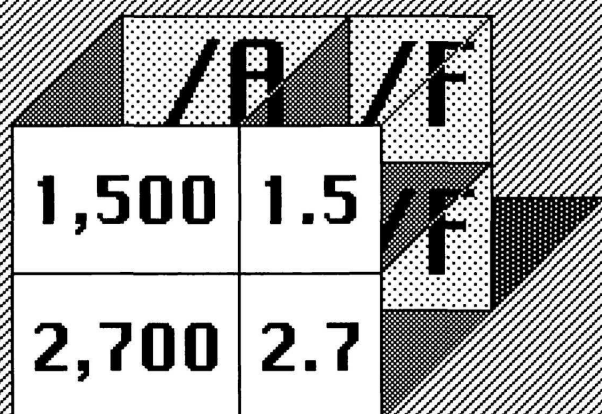
Instead of just selecting one of the options, you can also use them in these combinations:

AF	Attribute and format only; not cell contents.
AV	Attribute and Value only; not format or formula.
FV	Format and Value only; not attribute or formula.
AFV	Attribute, format, and value; not formula.
CN	All cell contents with No change; not attribute or format.
CR	All cell contents Relative; not attribute or format.
AN	Attribute and all cell contents with No change; not format.
AR	Attribute and all cell contents Relative; not format.

After you type the letters corresponding to the limit options you want, press:

(RETURN) or type)

Replicate: (, Source range or RETURN appears in the prompt line. Now enter the Source and Target ranges as you usually would for the Replicate command. When you press **(RETURN)** to complete the command, the cells in the Target range will contain only those aspects of the copied cells that you selected.



1,500	1.5
2,700	2.7

Controlling a Cell

Chapter 6 Controlling a Cell

Unit 1 Overview of the Rankings of Display Formats	6-3
General Format (Startup)	6-3
Global Format	6-4
Individual Cell Format (Local)	6-4
Choosing between Format, Attribute and Global Commands . . .	6-4
The Format Command	6-4
The Attribute Command	6-5
The Global Command	6-5
Unit 2 Using Formats to Change a Cell's Display	6-6
How to Use the Format Command	6-7
Setting the Number of Decimal Places	6-9
Resetting a Cell to the Global Format	6-9
Resetting a Cell to the General Format	6-9
Displaying Values as Rounded Whole Numbers	6-10
Aligning Cell Entries Left, Right or Center	6-10
Left-Aligned Format	6-10
Right-Aligned Format	6-11
Centered Format	6-11
Displaying Values Rounded to Two Decimal Places	6-11
Drawing Bar Graphs	6-12
Unit 3 Using Attributes to Protect a Cell or Change its Display . . .	6-13
How to Use the Attribute Command	6-14
Resetting a Cell to the Global Attribute	6-16
Controlling Entry of Data Types	6-16
Allowing Entry of All Data Types	6-16
Allowing Entry of Labels Only	6-17
Allowing Entry of Values Only	6-17
Displaying a Formula in a Single Cell	6-17
Preventing a Cell Entry from Changes	6-19
Making an Entry Invisible	6-19
Displaying Numbers with Commas	6-20

OVERVIEW OF THE RANKINGS OF DISPLAY FORMATS

You can change the way the worksheet displays or appears without affecting the actual values and formulas that are used for calculations. There are three different types of display changes you can make: general, local, and global. You use the Format command and the Attribute command to make local display changes (changes to one cell only). You use the Global command to make format and attribute changes that affect the entire worksheet.

In general, the Attribute command determines the type of data that can be entered into a cell, such as values or labels only. The Format command affects the way in which that data displays in the cell, such as centered in the cell or with a certain number of decimal places.

The three types of changes (general, local, global) and the three display commands (Format, Attribute, Global) are described in this chapter.

GENERAL FORMAT (STARTUP)

The *general format* settings are in effect whenever you load the FlashCalc program or use the Clear command to clear the screen. These general format settings are:

- All values displayed to maximum precision.
- Right-aligned values.
- Left-aligned labels.
- The Automatic Recalculation (/GRA).
- The Columnar Recalculation order (/GOC).
- Nine-character column width (/GC9).

You can change these settings, as needed, using the Format command and the Attribute command. The Global command can be used when you need to define the last three settings.

/B	/F
1,500	1.5
2,700	2.7

Controlling a Cell

GLOBAL FORMAT

Display characteristics may also be set for the entire worksheet. These are assigned with the Global command and are called *Global formats*. The Global formats that can be assigned are the same ones available with either the Format command or the Attribute command. A local format set with the Attribute command or the Format command overrides any global setting for the same attribute.

INDIVIDUAL CELL FORMAT (LOCAL)

Display characteristics set with the Format command or the Attribute command affect only the cell in which they are set, and therefore are called *local formats*. A local format is assigned to the cell contents, not the cell location; if the contents are moved to another location, the local format moves with it.

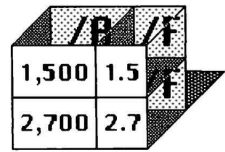
Notes:

- Local format settings override all global settings for each attribute.
 - Using the Blank command to remove the contents of a cell does not remove its local format. Using the /CY command to clear the worksheet removes all local formats.
-

CHOOSING BETWEEN FORMAT, ATTRIBUTE, AND GLOBAL COMMANDS

The Format Command

The Format Command allows you to change the way in which the cell data is displayed on the worksheet, such as centering the value or label in the cell. Or you can use the Dollars-and-Cents format to display values rounded to two decimal places. Each of



/B	/F
1,500	1.5
2,700	2.7

Overview of the Rankings of Display Formats

the formats consists of one characteristic; you cannot assign more than one format to a cell. Therefore, you cannot assign both the Right-Aligned and the Dollars-and-Cents format to one cell.

The Attribute Command

When you want to limit or control the type of data that can be entered into a cell, you can use the Attribute command (/A). You can protect a cell against change or specify that only a label or value can be entered in a cell. Or you can cause a cell to display nothing, even though it has a value or label in it; this is useful for reducing clutter by hiding reference values or lookup tables.

The Attribute command is very versatile. In addition to controlling or limiting the type of data in the cell, you can also use the Attribute command to display the formula in the cell rather than the calculated value of that cell. You also use the Attribute command to display numbers with commas inserted every three digits to the left of the decimal (for example, 1,000,000 rather than 1000000).

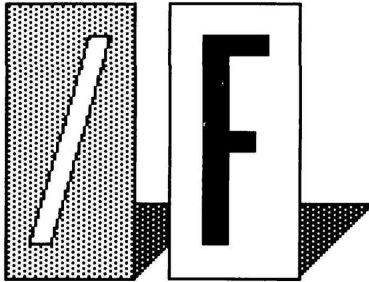
The Global Command

When you want to set formats or attributes for the entire worksheet, use the Global command. Remember that when using the Global command:

- Cells that do not have assigned attributes, either global or local, are displayed using the startup general format.
- When the screen is split, using the Window command, each window can display a different global format.
- Any local format (affecting one cell only) set with either the Format or Attribute command will override the global setting.

Using the Format and Attribute commands and their options are explained later in this chapter. Chapter 3 discusses the Global command.

USING FORMATS TO CHANGE A CELL'S DISPLAY



FORMAT

- 0-6 Display number of decimal places.
- D Default to global format of current window.
- G General format.
- I Integer display.
- L Left-justify entry.
- R Right-justify entry.
- C Center entry.
- \$ Dollars-and-cents.
- * Display values as stars.

You can affect the way the data displays in the cell by using the Format command. This command provides a variety of ways for you to change the way a label or value looks on the worksheet.



Using Formats to Change a Cell's Display

You can change the number of decimal places that show to the right of the decimal place or you can display the number as an integer. You can center the value or label in the cell or you can display it on the right or the left edge. In addition, you can display values as a graph, rather than as numbers.

If you do not change the display of the data in an individual cell, it will be displayed in either the general (startup) format or the global format (if you used the /GF command to reset the startup format).

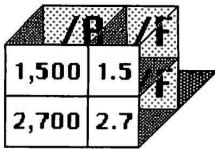
HOW TO USE THE FORMAT COMMAND

Move the cursor to the cell you want to format and type /F to begin the Format command. The prompt line shows:

Format: 0-6 D G I L R C \$ *

Each character stands for a different Format command option:

Character	Explanation
0-6	Displays and prints a value rounded to the number of decimal places entered. May be from 0 to 6 places.
D (Default Format)	Uses whatever format was last set with the Global Format command to set the cell's characteristics. Uses the general format as a default if no global format was set.
G (General Format)	Uses the display characteristics that are in effect when you clear the worksheet or load the program for an individual cell.



1,500	1.5
2,700	2.7

Controlling a Cell

Character	Explanation
I (Integer Display)	Displayed value is rounded to the nearest whole number. The value that is in memory for that cell is stored, and used in calculations, as a full precision value.
L (Left-Aligned)	A label is displayed aligned to the left edge of a cell. A value is displayed aligned to the second space from the left edge of a cell.
R (Right-Aligned)	Labels and values are displayed aligned with the right edge of the cell.
C (Centered)	Displays a label or value in the center of the cell. If the column width is changed, the label or value is re-centered in the cell.
\$ (Dollars-and-Cents)	Values are displayed with two decimal places. (This format does not add a \$ symbol to the displayed value.)
* (Graph Format)	Displays a row of asterisks equal to the values truncated (whole number) value.

After you have typed **/F** the next character you type tells the program your format choice. When you type the character, the cell display changes to the selected format.

Keep the following in mind when using the Format command:

- The label or value in a cell is not changed, only its appearance is affected.
- Calculations will always use the full precision of a cell's value.



Using Formats to Change a Cell's Display

- If a cell with a local format is moved to another location, the local format moves with it.
- All local formats are removed when you clear the worksheet (/CY).
- Global formats are overridden by local formats.

In the remaining sections of this unit, the options of the Format command are described further.

SETTING THE NUMBER OF DECIMAL PLACES

The 0-6 format displays the values in the formatted cell rounded to the number of decimal places indicated—from 0 to 6. For example, if you want to display a number with two decimal places place the cursor on that number and type **/F2**.

RESETTING A CELL TO THE GLOBAL FORMAT

The Default option of the Format command returns a cell's format to the format last set with the Global command. If no global format was in effect, the format defaults to the general (startup) format. For example, if you want to reset a cell to the Global format, place the cursor on that number and type **/FD**. More information on Global formats can be found in Unit 1 of Chapter 3.

RESETTING A CELL TO THE GENERAL FORMAT

The General format option is used to return to the startup format in a cell that has been assigned display attributes. In the general format:

- Values are displayed to the maximum precision that can be shown within the current column and aligned with the right edge of the column.

/B /F	
1,500	1.5
2,700	2.7

Controlling a Cell

- Labels are aligned with the left edge of the column. Labels are truncated by the right edge of the column if they are longer than the column's width, but the full label is kept in memory and displayed on the entry line.

Resetting a cell to the general format will show a change only if that cell is currently displaying an individual format. For example, if you had set a cell with an individual format and wanted to restore the general format for that cell, place the cursor on that cell and type **/FD**.

DISPLAYING VALUES AS ROUNDED WHOLE NUMBERS

You can use the Integer format to round a specific value to the nearest whole number. The cell displays the rounded number. The actual value is stored and used in calculations with full precision.

If you want to change the format of a cell to Integer format, place the cursor on that cell and type **/FI**.

ALIGNING CELL ENTRIES LEFT, RIGHT, OR CENTER

Left-Aligned Format

Labels are aligned with the left edge of the cell, and values with the right edge, when the startup or general format is in effect. You would use the Left-Aligned option most often when you want to change the alignment of values to the left edge. Values are left-aligned to the second space from the left edge of the cell.

For example, if you want to align a cell's contents to its left edge, place the cursor on that cell and type **/FL**.



Using Formats to Change a Cell's Display

Right-Aligned Format

Values are normally aligned with the right edge of the cell and labels are left-aligned when the general format is in effect. You would use the Right-Aligned option most often when you want to change labels to the right edge. Values and labels are right-aligned to the right edge of the cell.

For example, if you want to align a cell's contents to its right edge, place the cursor on that cell and type **/FR**.

Centered Format

Use the Center format to place a value or a label in the center of the cell. It will be equally spaced from the left and right edges of the cell, if possible. If the number of characters in the value or label does not allow exact centering, it is centered one character to the right.

For example, if you want to center the contents of a cell, place the cursor on that cell and type **/FC**.

DISPLAYING VALUES ROUNDED TO TWO DECIMAL PLACES

The Dollars-and-Cents format displays all values rounded to two decimal places. If the value is an integer, this format adds two decimal places (.00). If the value has only one decimal place, this format adds an extra 0 to the end of the displayed value.

For example, if you want to display the contents of a cell with two decimal places, place the cursor on that cell and type **/F\$**.

Note:

This format does not add a \$ symbol to the displayed value.

This format does not have any effect on labels.

/B	/F
1,500	1.5
2,700	2.7

Controlling a Cell

DRAWING BAR GRAPHS

The Graph Format option (/F*) lets you draw bar graphs with asterisks. The values that are stored in each individual cell are replaced with the number of asterisks equal to the truncated (not rounded) integer value of the cell. A value of 1 or 1.23, for example, displays one asterisk; a value of 2 or 2.95 displays two asterisks.

Using a column of cells, each with an appropriate value and set to Graph format, you can construct a bar graph on your spreadsheet. In Figure 6-1, cells B3 through B11 have been copied into C3 through C11. The cells in Column C have been set to the Graph format.

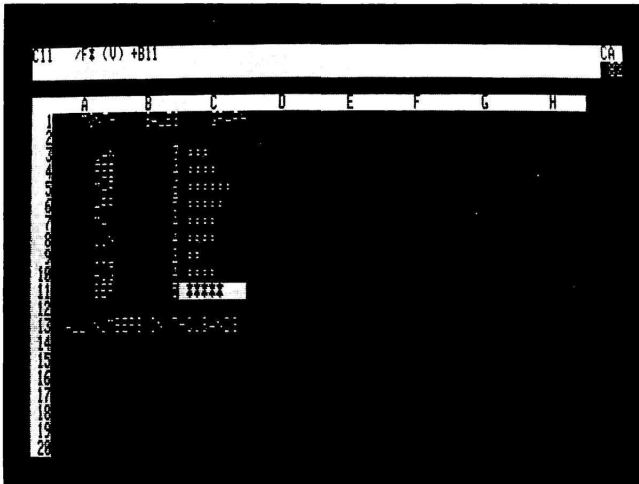
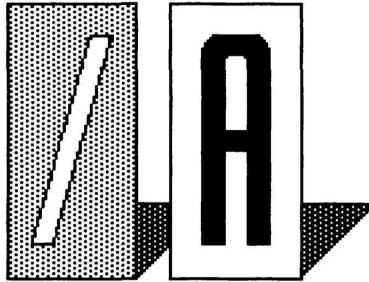


Figure 6-1. Displaying Monthly Sales in Graph Format

For example, if you want to set a cell to Graph format, place the cursor on that cell and type /F*.

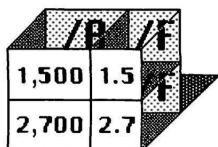
USING ATTRIBUTES TO PROTECT A CELL OR CHANGE ITS DISPLAY



ATTRIBUTE

- D** Default to global setting.
- A** All data—labels, values, and numbers can be used.
- L** Only labels can be used.
- V** Only values can be used.
- ,** Display comma every three places.
- E** Expression
- P** Protect cell.
- ;** Display comma every three places and include protection.
- H** Hide

In general, attributes are used to control or limit the type of data that can be typed into a cell. For example, you can assign the Value option of the Attribute command to a cell so that only values, not labels, can be typed into that cell. You can also prevent a cell from any changes or you can hide a cell so its



/B	/F
1,500	1.5
2,700	2.7

Controlling a Cell

contents cannot be seen. Additionally, you can use the Attribute command to insert commas in numbers to separate every third digit.

HOW TO USE THE ATTRIBUTE COMMAND

To set a cell's attributes, move the cursor to that cell and type **/A**. The prompt line displays:

Attribute: D A L V , E P ; H

You will then type one of the following characters to get the desired effect:

Character (Name)

Effect

D Default

Sets all attributes in a cell to the current global defaults. If no global attributes are set, the startup settings are used. (Global settings are specified with the /GA option of the /G command; see Chapter 3, Unit 1 for more information on the Global command.)

A All

Allows entry of either values or labels in the cell.

L Label

Allows entry of only labels in the cell; any entry into the cell(s) becomes a label.

V Value

Allows entry of only values in the cell; labels cannot be entered.

, Commas


Automatically displays commas in numbers separating every third digit to the left of the decimal point.



Using Attributes to Protect a Cell or Change Its Display

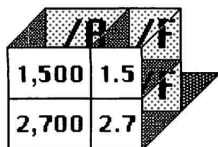
Character (Name)	Effect
E Expression Format	The cell's formula, instead of its calculated value, is displayed.
P Protection	Protects cell from any changes while this attribute is in effect. Keeps data from being overwritten.
; Commas with Protection	Automatically enters commas in numbers separating every third digit to the left of the decimal point. Also protects the cell so that no changes can be made to the current entry.
H Hide	Makes contents of a cell invisible. Includes protection, so that no new entries or changes can be made to the cell.

Note:

Cells that are protected (with P, ;, or H) will be skipped by the  key (See "Preventing a Cell Entry From Changes" for more information about protected cells.)

When you use the Attribute command, remember that:

- Global settings are overridden by local settings (attributes set for a single cell) for the same attribute.
- All local and global attributes are saved with your worksheet.



Controlling a Cell

- Attributes affect only how labels and values are displayed or printed, not how they are stored in memory. The full precision of values and labels are stored and the full precision of values is always used in calculations.
- The /GA option of the Global command can be used to set Attributes globally (for the entire worksheet). See Chapter 3, Unit 1 for more information on setting attributes globally.

If you want to see which local attribute has been set in a cell, move the cursor to that cell. The entry line displays the cell coordinates, and the attribute option.

RESETTING A CELL TO THE GLOBAL ATTRIBUTE

Use the Default option (/AD) to return a cell's attribute to the attribute that was last set with the Global command. The attribute defaults to the general (startup) format if no global attribute is in effect.

CONTROLLING ENTRY OF DATA TYPES

The All (A), Label (L), and Value (V) options of the Attribute command control what kind of data can be entered (labels or values). Each one of these is discussed below.

ALLOWING ENTRY OF ALL DATA TYPES

The All option of the Attribute command allows either values or labels in the cell. You might globally assign the worksheet /GAV because almost all entries will be values. You could then use /AA to reset the few cells in which it does not matter what type of data is entered. Or you might assign the /AA attribute to a cell in which someone else using your worksheet might sometimes enter values and sometimes labels.



ALLOWING ENTRY OF LABELS ONLY

The Label option of the Attribute command automatically causes all entries to be labels, even though they might begin with a character that would normally be considered a value. For example, you might want to use a series of numbers representing a ten year period as labels. In order to do this, you would need to precede each number with a quote mark to tell the program you are typing a label. If you use the Label option, you can just enter each one, such as 1980 1981 1982, etc. and they will be used as labels on the worksheet. (You can use the Global command to set the worksheet for label entry, and then reset it back to the default attribute when you are through entering labels.)

ALLOWING ENTRY OF VALUES ONLY

The Value option of the Attribute command performs the same function as the Label option, except that **only values** (numbers, formulas, or functions) can be typed in the cell. If you try to enter letters (or the quote marks to indicate a label), the program will beep and they will not be accepted. Press the **(ESC)** key to delete the letter and type values, or change the attribute option.

DISPLAYING A FORMULA IN A SINGLE CELL

Normally, cells display the calculated result of a formula. You can display the expression (formula) in the cell by using the Expression format option (/AE).

Because it lets you see which cells are referenced by each formula in a worksheet, the Expression format option is useful in helping you evaluate the logic of the worksheet.

/B	/F
1,500	1.5
2,700	2.7

Controlling a Cell

Note:

Local attributes for cells containing formulas are temporarily overridden by a global setting of the Expression format. When the global attribute is reset to the default (/GAD) the attribute as previously set for cells containing formulas will be in effect again. (Attributes of cells that do not contain formulas are not affected by /GAE.)


To see every formula displayed in its cell on the worksheet, use the Attribute option of the Global command (/GAE), as described in Chapter 3, Unit 1. Figure 6-2 shows a worksheet displayed in expression format.



Figure 6-2. Worksheet Displayed Using the Expression Format



PREVENTING A CELL ENTRY FROM CHANGES

You may want to protect an entry in a cell from any changes. This can be particularly important when a worksheet is used for standard data entry, where you may not want titles, labels, or formulas changed or overwritten. The P (Protect) option of the Attribute command prevents anyone from entering anything in the cell until the attribute is changed. The  key will skip any protected cells.

To “turn off” the Protect option, use the Default option (/AD).

Note:

/AP protects only data entry in the cell. You can change attributes and formats in a protected (/AP) cell and you can replicate into a protected cell. Replicating into a cell in which /AP has been set will change that setting to whatever was replicated.

MAKING AN ENTRY INVISIBLE

Sometimes you may need to make some worksheet entries invisible in order to hide information or calculations that may confuse the person using the worksheet.

With the H (Hide) option of the Attribute command, you can make an entry invisible so that it won't be displayed on your screen nor printed, if you print the worksheet.


To use the Hide option, move the cursor to the cell whose contents you want to hide and type /AH.

To “turn off” the Hide attribute, type /AD.


/B /F	
1,500	1.5
2,700	2.7

Controlling a Cell

Note:

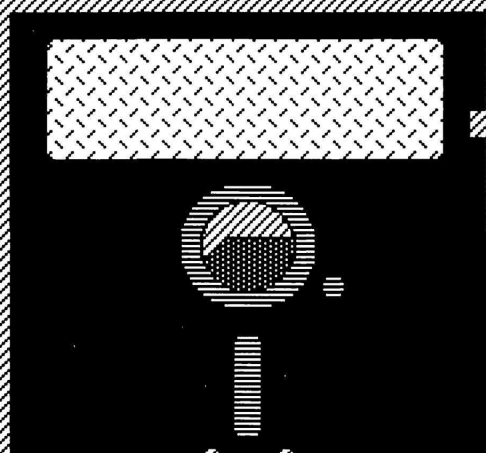
The /AH option includes protection, so that no entry or change can be made into the cell whose contents is hidden from view. The  will skip any cells assigned the Hide option, since it is also a protected cell.

DISPLAYING NUMBERS WITH COMMAS

If you want numbers on the worksheet to be displayed with commas, you can use the , (Comma) or ; (Semicolon) options of the Attribute command. These commands cause numbers to display with commas every third digit to the left of the decimal point. The Semicolon option also includes protection, thus the number displays with commas and no changes can be made to the cell until the attribute option is changed. As with other options with protection, the  key will skip any cell that has been assigned the ; option.

Note:

The program assumes that when you assign the Comma attribute (/A,) to a cell, the content of the cell is a value, not a label. Thus you cannot change the current entry from a value to a label without changing the attribute. If you globally set the comma option of the Attribute command, you will not be able to enter labels on your worksheet. Thus, if you wish to globally assign commas to your worksheet (/GA,) it is most efficient to do this after all entries have been completed. (The appearance of current label entries are not affected by the Global Comma option; however, you will not be able to change the label until you change the attribute option.)

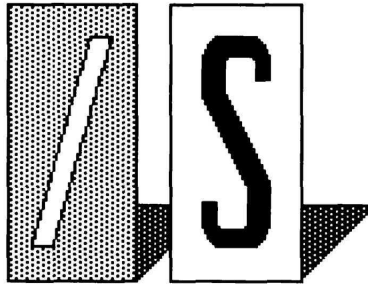


**Saving and Loading
Worksheets**

Chapter 7 Saving and Loading Worksheets

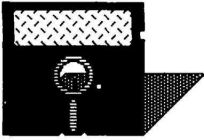
Unit 1 Overview of the Storage and Utilities Menus	7-3
Introducing the Storage Commands :	7-5
Selecting Commands and Options	7-7
Using the ESC Key	7-7
Entering the Prefix	7-8
How to Change the Prefix	7-8
Using Subdirectories	7-10
Rules for Naming Directories and Files	7-11
Editing a File Name or Prefix	7-11
Editing an Existing Prefix	7-12
Unit 2 Saving a Worksheet	7-13
Why You Should Save Your Worksheets Often	7-13
How to Use the Save Command	7-14
Saving a Worksheet That Spans More Than One Data Disk	7-15
Unit 3 Loading a Worksheet	7-18
How to Use the Load Command	7-18
Combining Worksheets	7-19
Loading a Worksheet from More Than One Disk	7-20
Unit 4 Saving and Loading DIF™ Files	7-21
How to Save DIF™ Data	7-21
What Is Saved in a DIF™ File	7-23
How to Load DIF™ Data	7-23
Changing Columns to Rows	7-26
Unit 5 Locking and Unlocking a File	7-27
How to Use the Lock Command	7-27
Unit 6 Displaying the List of File Names	7-29
How to Use the Catalog Command	7-29
Unit 7 Initializing a Data Disk	7-30
How to Use the Init Command	7-30
Unit 8 Deleting a File	7-32
How to Use the Delete Command	7-32
Unit 9 Making Backup Copies	7-33
Copying a File	7-33
Copying a Disk	7-33

OVERVIEW OF THE STORAGE AND UTILITIES MENUS



STORAGE

- O Set options:
 - Prefix—Directory to use for storing.
 - Upper left (DIF files only)—Upper left corner of area to be saved or loaded.
 - Lower right (DIF files only)—Lower right corner of area to be saved. (Entire DIF file always loads.)
 - File format—DIF or FlashCalc format.
 - DIF order—Save or load a DIF file in row or column order.
- S Save worksheet.
- L Load worksheet.
- U Display Utilities menu.
- L Lock a file from being changed.
- U Unlock a file.
- C Display the catalog of file names in directory.
- I Initialize a floppy disk.
- D Delete a file.
- S Return to Storage menu.
- C Return to worksheet.



Saving and Loading Worksheets

This unit introduces you to the Storage and Utilities menus and teaches you how to move from one menu to another. You use the menus to save and load worksheets and to maintain the files stored on your data disks. The unit also contains information about prefixes and file names, which you need to know before using any of the commands in the Storage and Utilities menus.

To see the Storage menu, type **/S** now. Your screen should look like Figure 7-1. If you changed the prefix or the setting of any other option, your screen shows different settings at the right.

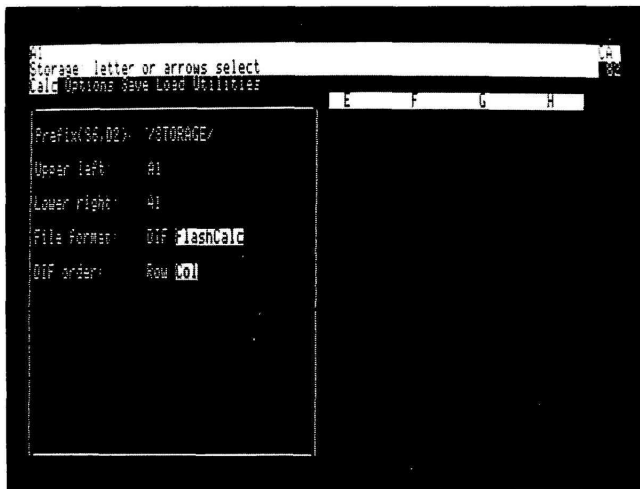
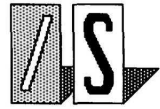


Figure 7-1. The Storage Menu



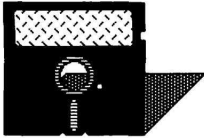
INTRODUCING THE STORAGE COMMANDS

The top line of the screen is unchanged from the FlashCalc™ worksheet screen. The prompt line gives you instructions on how to use the Storage menu. The edit line is what we are concerned with now; it contains the menu commands.

Command	What It Does
Calc	Returns the worksheet to the screen.
Options	Moves the cursor to the list of options.
Save	Saves the current worksheet as a file to a disk. The Save command is explained in Unit 2.
Load	Loads a worksheet you previously saved. The Load command is explained in Unit 3.
Utilities	Displays the Utilities menu, which contains commands for managing the files on your data disks.

The Storage options are listed below the commands. The Prefix option is explained later in this unit; it is used with all of the commands described in this chapter. The other four options (Upper Left, Lower Right, File Format, and DIF Order) apply only to DIF™ files and are explained in Unit 4.

The Utilities command displays the Utilities menu. Type **U** now to see the Utilities menu. Your screen should look like Figure 7-2.



Saving and Loading Worksheets

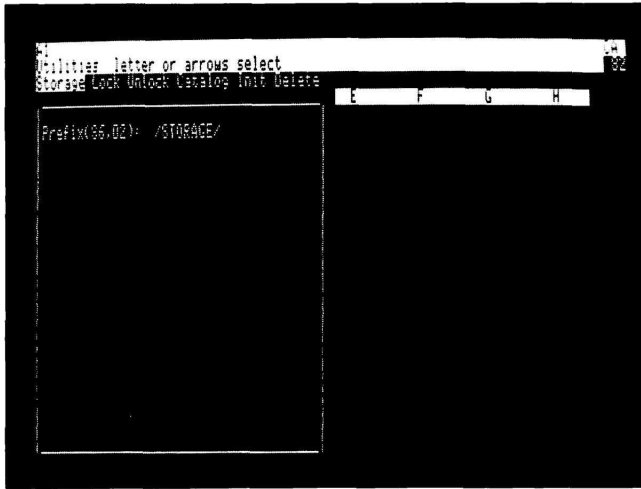


Figure 7-2. The Utilities menu

Command	What It Does
Storage	Returns the Storage menu to the screen.
Lock	Protects a data file from being changed.
Unlock	Removes the Lock command to allow a file to be changed. The Lock and Unlock commands are explained in Unit 5.
Catalog	Displays the names of the files stored on a given data disk or directory. The Catalog command is explained in Unit 6.
Init	Prepares a data disk for receiving data files. The Init command is described in Unit 7.
Delete	Deletes a file from a data disk. The Delete command is described in Unit 8.

The DIF options disappear from the options list, because they are not used with the commands in the Utilities menu.



SELECTING COMMANDS AND OPTIONS

The cursor should still be on the Storage command, because you just selected the Utilities command to view the Utilities menu.

To move the cursor from one command to another, you press **←** or **→**. To select a highlighted command, you press **RETURN**. A shortcut method is to type the first letter of the command you want to select (remember that you typed **U** to select the Utilities command).

Type **S** now to return to the Storage menu.

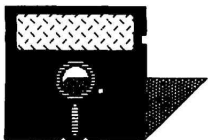
To move the cursor to the list of options, either select the Options command, or just press **↓**, whichever is more convenient for you.

To fill out one of the options in the list, press **↓** or **↑** until that option is highlighted. Then, press **RETURN**. Depending on the option, pressing **RETURN** either selected the option or changed the option from one setting to another. Details on how to use each of the options is included in the appropriate unit. For instance, the Prefix option is described in this unit, and the remaining four options are discussed in Unit 4.

USING THE ESC KEY

The **ESC** key is handy for “backing out” of wherever you’ve gotten yourself in the program. For instance, pressing **ESC** while the cursor is in the list of options moves the cursor to the Calc command. Pressing **ESC** while the cursor is highlighting one of the commands in the Utilities menu takes you to the Storage menu. Pressing **ESC** from one of the Storage menu commands returns you to the worksheet. If you ever select a command and change your mind, **ESC** cancels it.

With the Delete, Lock, and Unlock commands, you must press **ESC** to stop using the command. The files you deleted, locked, or unlocked remain so. For details, refer to Units 5 and 8 in this chapter.



Saving and Loading Worksheets

ENTERING THE PREFIX

The prefix is the name of the disk you want to use with one of the Storage commands. The Storage commands either do something to a particular file on a disk (Save, Load, Lock, Unlock, or Delete) or they do something to an entire disk (Catalog, Init). The Prefix option identifies which disk you want to use.

You enter the prefix in the form of the *volume name* of the disk. The volume name is the name you gave the disk when you initialized it. For instance, when you initialized the data disk in the *QuickStart Course*, its volume name was /STORAGE.

You cannot set the prefix to a floppy data disk unless it has already been initialized. Directions for initializing a disk are in Unit 7 in this chapter.

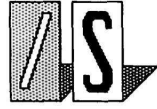
Note:

The prefix can be set to a *subdirectory* on a floppy disk or on the ProFile™ hard disk. A subdirectory does not need to be initialized before you use it. For information on subdirectories, refer to the next section "Using Subdirectories."

Each time you load the program, the prefix is initially set to /FLASHCALC, which is the volume name of the FlashCalc program disk. To use a data disk, it is not enough to just remove the program disk and insert the data disk in the drive. To use another disk, you need to change the prefix.

How to Change the Prefix

Use the arrow keys (or select the Options command) to move the cursor to the Prefix option. Press **(RETURN)**. Then, do one of two things:



Overview of the Storage and Utilities Menus

- Indicate the drive that contains the disk you want to use. Type a comma, and a D followed by the drive number. For instance, to indicate drive 1, type **,D1**, or **,D2** to indicate drive 2. You can indicate a new slot number also. See the note below for details.
- Type the volume name of the disk you want to use. Remember to include the / before the name. For instance, if the disk's volume name is STORAGE, type **/STORAGE**.

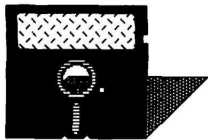
If you make a mistake in typing the above information, press the **(ESC)** key to erase each previous character from the edit line until you erase your mistake. Then continue typing.

Press **(RETURN)** to complete your Prefix option entry. The volume name of the disk you chose appears next to the Prefix option. (If you typed a volume name that the program cannot find in any one of the drives, or if you indicate a drive that does not contain an initialized disk, you will get an error message.) When you select one of the Storage commands, the program will use the disk you just specified.

Note:

You probably have two floppy disk drives connected to a controller card that is installed in slot 6 in your computer. The prefix is initially set to slot 6, so to indicate either one of these drives you need to type only **,D1** or **,D2**.

If you have more than two floppy drives, you will have to indicate the slot number before you can use the additional drives. If the additional drives are connected to a card installed in slot 4, you would type **,S4,D1** or **,S4,D2** to use them. If you have a ProFile™ hard disk, for example, its interface card is probably installed in slot 5. So, to switch the prefix to the hard disk, you would type **,S5,D1**.



Saving and Loading Worksheets

Using Subdirectories

With ProDOS, a given disk (or volume) can have one or more directories. Each directory can have one or more subdirectories, and so on. These directories allow you to keep your files in logical "compartments" on your disks. The *ProDOS User's Manual* explains the concepts of volume, directory, and subdirectory in detail.

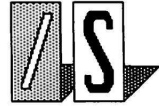
You can use the Prefix option to be more specific about which directory you want to use on a disk. If you have a subdirectory on a disk, you can enter it as part of the prefix. You must first make the directory (using the Make Directory command on the ProDOS User's Disk).

For instance, if you have a data disk with the volume name of /INVOICES, you may have a directory on it called /SHIPPING. The /SHIPPING directory might have a subdirectory called /JANUARY. In preparation for saving and loading files from the JANUARY subdirectory, you would enter **/INVOICES/SHIPPING/JANUARY** as the prefix.

You can enter as many directories as you like for the prefix; your only limitation is that the prefix can include at most 64 characters.

Note:

If you want to add a subdirectory to an existing prefix, there is no need to retype the entire pathname. You can edit the existing prefix and add the subdirectory name to it. Refer to instructions at the end of this unit on editing an existing prefix.



RULES FOR NAMING DIRECTORIES AND FILES

Each time you save a worksheet, it is saved in a file on the data disk. During the process of saving the file, you must give it a name.

The rules for the characters you can use in a name are the same as the rules for naming directories and files in ProDOS. The rules are:

- The name must begin with a letter.
- The name must be fewer than 16 characters long.
- The name can contain only letters, numbers, or periods.

It makes no difference if you use uppercase or lowercase letters. The program considers `budget` and `BUDGET` to be the same file name.

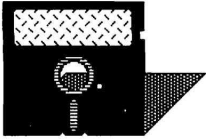
EDITING A FILE NAME OR PREFIX

As you are in the process of typing the prefix or a file name, the characters you type are displayed on the edit line. The Save, Load, Unlock, Lock, and Delete commands all display the file name you are typing on the edit line.

To edit the file name or prefix you are typing, you press **CTRL-E**. Then use the **←** key to move the edit cursor to the point where you want to make a correction. Characters you type are inserted to the left of the cursor's position. Pressing **ESC** erases the character to the left of the cursor. Pressing **CTRL-I** erases the character under the cursor, along with every character to the right of it.

You can move the edit cursor along the edit line using the arrow keys without affecting the file name or prefix:

- **←** moves the cursor left one character.
- **→** moves the cursor right one character.



Saving and Loading Worksheets

- **↑** moves the cursor to the beginning of the line.
- **↓** moves the cursor to the end of the line.

Press **RETURN** to complete the editing process, or press **CTRL-C** to cancel it.

EDITING AN EXISTING PREFIX

The most common reason to edit a prefix that is already displayed is to add a subdirectory to the end of it. Suppose the prefix is set to /DIRECTORY. If you want to save and load files from the subdirectory called /SUBDIRECTORY, you can change the prefix quite easily:

1. Type **/S** to display the Storage menu.
2. Type **0** or press **↓** to highlight the Prefix option.
3. Now, instead of pressing **RETURN**, press **CTRL-E** to select the Prefix option. The existing prefix appears on the edit line with the edit cursor resting at the beginning of the line.
4. Use any of the editing techniques described above under "Editing a File Name or Prefix." In the case of adding a subdirectory name, just press **↓** to move the edit cursor to the end of the line and type the subdirectory name you want to use.
5. Press **RETURN** to complete the entry. If the name you typed was valid (had previously been created on that disk with the ProDOS User's Disk), the prefix setting adds the subdirectory to the prefix.

You can use this same process to edit an existing setup string for printing a worksheet.

SAVING A WORKSHEET

With the Save command (one of the Storage commands), you can save a complete copy of the worksheet. Everything associated with the worksheet is saved: the position of the cursor, any windows you may have created, titles, display formats, and so on.

Before you can save a worksheet, you must initialize a data disk. You can use the disk named /STORAGE that you initialized in the *QuickStart Course* or you can initialize another one. Refer to Unit 7 if you want to initialize a new disk. The exception to this rule is if you installed the program on a hard disk; you can save worksheets in the same directory that contains the program.



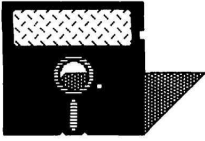
WHY YOU SHOULD SAVE YOUR WORKSHEETS OFTEN

If the computer memory is erased, your worksheet is lost. You can load the latest version that you saved, but you will have to repeat any changes you made since you last saved it. The computer memory will be erased if you turn the computer off, trip over the cord, use the Clear command, or experience a power failure.

It is a good practice to save the worksheet every five or ten minutes. You can save the file to the same name as before, or for extra protection, save it under a different name to create separate files.

For worksheets that are especially valuable to you, you might want to protect yourself further in one of the following ways:

- Print the worksheet. Refer to Chapter 8 for instructions.
- Use the Formulas command (one of the Print commands) to print a list of the contents (including formulas and formats) of every cell in the worksheet. This feature is described in Chapter 8.
- Save the worksheet again on another data disk. This procedure is explained in Unit 9 in this chapter.



Saving and Loading Worksheets

- Finally, to protect a file from being overwritten or deleted, use the Lock command, explained in Unit 5.

HOW TO USE THE SAVE COMMAND

1. Type **/S** to enter the Storage menu. Make sure that the Prefix option lists the volume name of the disk onto which you want to save the worksheet. If it doesn't, follow the instructions in Unit 1 to change the prefix.

Note:

If the message Enter lower right or RETURN appears immediately after you type **/S**, press **(RETURN)**. Then press **(↓)** until the File format option is highlighted. Press **(RETURN)** to highlight FlashCalc instead of DIF. Instructions for using DIF files are included in Unit 4.

2. Then, type **S** to select the Save command. The names of files (if any) already saved on the disk are listed. If the list of file names is too long for one screen, the message at the bottom of the screen says you can press **(RETURN)** to see the continuation of the file list. The prompt line reads Save: File name, number, or ESC.
3. You have several choices at this point. You can:
 - Type a new file name to save the worksheet as a new file.
 - Type the number of a file on the list to overwrite an existing file. You would do this if you had just loaded a file, modified it, and want to save the new version. You should be careful doing this, however, because the old file will be permanently erased when you press **(RETURN)**.
 - Press **(ESC)** to cancel the Save command.



4. After you have typed a file name or number, press **(RETURN)** to accept your entry. The disk drive whirs, then the worksheet screen reappears.

If you type the name of a file that already exists on the data disk, the program prompts you to make sure you want to replace the existing file: File already exists. Press Y to overwrite old file. If you type **Y**, the file you are saving replaces the file with the same name; if you type anything else, the Save command is canceled. Be careful. The worksheet you are replacing will be permanently deleted when you type **Y**.

If the list of file names is more than one screen long, you cannot type a file number that has not already been displayed. You can type a file's name at any time, but to save a file by number to overwrite an existing file, press **(RETURN)** until the name of the file you want to save is displayed on the screen.

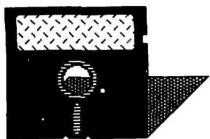
WARNING:

BE CAREFUL WHEN YOU TYPE A FILE NUMBER TO SAVE A FILE. YOU WILL PERMANENTLY DELETE THE EXISTING FILE AND REPLACE IT WITH THE CURRENT WORKSHEET.

SAVING A WORKSHEET THAT SPANS MORE THAN ONE DATA DISK

If you have a large amount of RAM memory installed in your computer, it is possible to create a file that is too large to be saved on just one disk. This feature allows you to save such a large worksheet.

You can also use the following procedure if you try to save a worksheet on a disk that already contains many other files and is almost full. It would probably be easier for you in this case to initialize a new data disk and save the worksheet again on the



Saving and Loading Worksheets

new disk. But if you have no other disks available, you can save part of the worksheet on one disk and part on another.

Note:

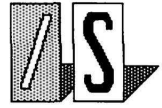
If you press **(ESC)** at any point to cancel the saving process described below, be aware that you may be left with only a partially saved worksheet on disk.

If there is not enough room on the disk for the worksheet you are trying to save, a message appears on the screen telling you that the disk is full and that you should insert a new disk. You need to use another data disk. Do one of two things:

- Remove the full disk from the drive and replace it with another disk (for purposes of this discussion, the new disk is the *continuation* disk), OR
- Make sure there is another data disk available in another disk drive. Then, type a comma followed by the drive number of the other disk drive. For instance, to designate drive 2 (on the same slot) as the continuation disk, type **,D2**.

Press **(RETURN)**. Now you have two choices again: to initialize the continuation disk or not.

- To simply save the continuation file on the disk, press **(RETURN)**. The program returns to the worksheet screen.
- If you need to initialize the disk, type **Y**. Then:
 1. The program prompts you to type **Y** again to confirm that you want to erase the contents of the disk.
 2. A message prompts you for a new volume name for the disk, just as if you had selected the Init command (refer to Unit 7 for full details).



3. After you press **RETURN** to enter the new volume name, the program initializes the disk, saves the continuation file on the disk, and returns to the worksheet screen.

The program follows these rules for naming the continuation file:

- If the last character in your file name is a letter or a period, a 0 is added to the end of the name for the continuation file name. If the file name is already 15 characters long, the last character is deleted and replaced with a 0.
- If the last character in the file name is a number, that number is incremented by one for the continuation file name. If the number is already a 9, a zero is added to make the file name end with 90, unless the name is already 15 characters long. In that case, the zero replaces the 9.

For instructions on how to load a file that was saved on more than one disk, refer to the next Unit 3 in this chapter.

LOADING A WORKSHEET

You can retrieve a worksheet you have saved on a data disk by *loading* it. When a worksheet is loaded, it is displayed exactly as it was saved. The cursor will be in the same position you left it when you saved the worksheet.

HOW TO USE THE LOAD COMMAND

1. Type **/S** to enter the Storage menu. Make sure that the Prefix option lists the volume name of the disk from which you want to load a worksheet. If it doesn't, follow the instructions in Unit 1 to change the prefix.

Note:

If the message Enter lower right or RETURN appears immediately after you type **/S**, press **(RETURN)**. Then press **(↓)** until the File format option is highlighted. Press **(RETURN)** to highlight FlashCalc instead of DIF. Instructions for using DIF files are included in Unit 4.

2. Then, type **L** to select the Load command. The names of files (if any) already on the disk are listed. If the list of file names is too long for one screen, the message at the bottom of the screen says you can press **(RETURN)** to see the continuation of the file list. The prompt line reads Load: File name, number, or ESC.
3. You have several choices at this point. You can:
 - Type the name of the file you want to load.
 - Type the number of the file you want to load.
 - Press **(ESC)** to cancel the Load command.



4. After you have typed a file name or number, press **(RETURN)** to accept your entry. The disk drive whirs, then the worksheet screen reappears with the worksheet you selected.

Note:

If the list of file names is more than one screen long, you cannot type a file number that has not yet been displayed. You can type a file name at any time, but to load a file by number, press **(RETURN)** until the file name is displayed.

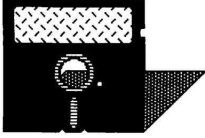
If the computer beeps several times after you specify a file to be loaded, and the worksheet returns with EOD displayed in cell A1, you tried to load a DIF file with the File Format option set to FlashCalc. Refer to Unit 4 for directions on loading a DIF file.

If the file you are loading is large, it may take a long time to load. You can press **(ESC)** at any time to cancel the loading process and return to the worksheet. The portion of the worksheet that had already been loaded is displayed. Be aware that even though much of the worksheet is showing, you may not have loaded it in its entirety.

COMBINING WORKSHEETS

If you load a worksheet without clearing the screen first (by typing /CY), the message overlay worksheet appears. If you press **(RETURN)** at this point, the second worksheet will load over the first.

If a cell is filled on both worksheets, the entry on the second worksheet replaces the entry on the first. If a cell on the second worksheet is blank, the corresponding cell on the first is not erased. This makes it possible for one worksheet to be combined



Saving and Loading Worksheets

with another. With careful planning, this overlaying process can be a useful way of combining the data from more than one worksheet.

If you want to avoid combining worksheets, press **(ESC)** when the overlay worksheet message appears.

LOADING A WORKSHEET FROM MORE THAN ONE DISK

In Unit 2, we describe how to save a worksheet that is too large to fit on one data disk. The same procedure may be used if you try to save a file to a disk that is already almost full.


The process of spanning more than one disk saves part of a worksheet on one disk and part on another. Loading such a worksheet is a simple procedure:

1. Load the first part of the worksheet as you would any other file. When the file has finished loading, the screen lists the file name, the message Sudden end of data, and the name of the continuation file. This message simply lets you know where to find the remainder of the worksheet you just loaded.
2. Press **(RETURN)**. Insert the continuation disk in one of the drives and change the prefix to that disk's volume name.
3. Now load the continuation file as you would any other file. When the overlay worksheet message appears, press **(RETURN)**. In this case, you do want to combine the two worksheets.

SAVING AND LOADING DIF™ FILES

The File Format option (in the list of Storage options) allows you to use a special format called DIF™ instead of the usual FlashCalc file format. With DIF files, you can copy data from one FlashCalc worksheet to another, or you can move data to and from other programs.

If you have several columns full of numbers that you want to use in another worksheet, use the DIF format. Saving a DIF file from one worksheet and loading it into another worksheet saves you the effort of retyping all that data.




If the File Format is set to DIF when you use the Save command, the worksheet will be saved as a DIF file. A DIF file always contains data from a rectangular area of cells from the worksheet. The size of the area is determined by the settings for the Upper Left and Lower Right options.

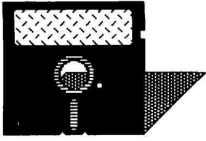
HOW TO SAVE DIF™ DATA

1. Type **/S** to enter the Storage menu.

Note:

If the message Enter lower right or RETURN appears, type the coordinates of the lower-right cell of the block of cells you want to save. This provides the entry for the Lower Right option, explained below. This prompt speeds up the process of saving DIF files by letting you type the entry for the Lower Right option while you are still viewing the worksheet.

2. Type **0** to move the cursor to the list of Storage options. Then, fill out the following options:
 - The Prefix option must refer to the disk on which you want to save the DIF file. For directions on changing the prefix, refer to Unit 1.
- 



Saving and Loading Worksheets

- The Upper Left option must list the cell that defines the upper-left corner of the block of cells you want to save. The initial entry for this option is the cursor's position on the worksheet when you typed **/S** to enter the Storage menu.

To change the entry, move the cursor to the Upper Left option and press **(RETURN)**. Type the coordinates of the upper-left cell in the rectangle you want to save. Press **(RETURN)**.

- The Lower Right option must list the cell that defines the lower-right corner of the block you want to save. If you typed the lower-right cell in response to the prompt explained in the Note above, those coordinates are showing.

To change the entry, move the cursor to the Lower Right option and press **(RETURN)**. Type the coordinates of the lower-right cell. Press **(RETURN)**.

- The File Format option must highlight DIF instead of FlashCalc.

To change the entry, move the cursor to the File Format option and press **(RETURN)**. The highlighting moves from FlashCalc to DIF.

If you leave the File format option set to DIF, the prompt Enter lower right or RETURN (explained in the Note above) appears the next time you enter the Storage menu from the worksheet.

- Do not change the entry for the DIF Order option before saving a DIF file. Use this option before *loading* a DIF file.
3. When you are finished filling out the options, type **S** to select the Save command. Then use the Save command as you usually would to save a file. Refer to Unit 2 in this chapter for instructions.



WHAT IS SAVED IN A DIF™ FILE

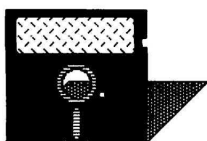
When you save a DIF file, the data is saved in the following manner:

- Only the values that appear in the cells are saved, not the formulas behind the values. For example, if the formula for cell A2 is +A1, which results in a value of 50 on the worksheet, the DIF file would contain the value 50, not +A1.
- A cell that contains a repeating label (/ -) is saved as a single character. For example, a line of dashes would be saved in a DIF file as a single dash.
- Any global or local formats or attributes are not saved in a DIF file. If you load a DIF file into a worksheet that has display formats in effect, the data will be displayed under the constraints of those formats.

HOW TO LOAD DIF™ DATA

1. Type **/S** to enter the Storage menu. (If the prompt Enter lower right or RETURN appears, just press **RETURN**). This prompt applies only to saving DIF files.)
2. Type **0** to move the cursor to the list of Storage options. Then, fill out the following options:
 - The Prefix option must refer to the disk from which you want to load the DIF file. For directions on changing the prefix, refer to Unit 1.
 - The Upper Left option must list the cell where you want the upper-left corner of the DIF file to be loaded. The initial entry for this option is the cursor's position on the worksheet when you typed **/S** to enter the Storage menu.

To change the entry, move the cursor to the Upper Left option and press **RETURN**. Type the coordinates of the cell where you want the upper-left corner of the file to be loaded. Press **RETURN**.



Saving and Loading Worksheets

- The entry for the Lower Right option is unimportant. The entire DIF file you choose will be loaded, no matter what you enter for the Lower Right option.
- The File Format option must highlight DIF instead of FlashCalc.

To change the entry, move the cursor to the File Format option and press **(RETURN)**. The highlighting moves from FlashCalc to DIF.

- If you want to load a DIF file “rotated 90 degrees” from the position in which you saved it, change the DIF order option to Row. Usually, you would not change this setting. Changing from columns to rows is explained in detail at the end of this unit.
3. When you are finished filling out the options, type **L** to select the Load command. Then use the Load command as you usually would to load a file. Refer to Unit 3 in this chapter for instructions.

Figure 7-3 shows a sample worksheet. Cell A2 contains a repeating label of asterisks. Cells A3 and B3 contain the values 1000 and 2000, respectively. The cursor is on cell C3, so you can see on the entry line that cell C3 contains a formula that adds the values in cells A3 and B3. The worksheet has been given the Global Comma Attribute (/GA,).

If you save the rectangular area bounded by cells A1 and C3 as a DIF file, then reload the file into a cleared worksheet, the new worksheet would look like Figure 7-4.

We moved the cursor to cell C3 in the photograph to show you that the cell contains only the value 3000, not the formula that previously calculated 3000. The DIF Data label transferred with no change, but the repeating label of asterisks came across as only one asterisk. The values in cells A3 through C3 appear without commas, because the Comma Attribute was not saved in the DIF file.



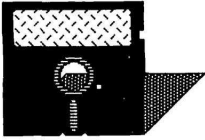
Saving and Loading DIF™ Files

	A	B	C	D	E	F	G	H
1	DIF Data	1.000	2.000	3.000				
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

Figure 7-3. Sample Worksheet

	A	B	C	D	E	F	G	H
1	DIF Data	1.000	2.000	3.000				
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

Figure 7-4. Sample DIF File after Reloading



CHANGING COLUMNS TO ROWS

You usually save a DIF file with the DIF order option set to Col to specify column order. Before loading the DIF file, you can change the DIF Order option to Row. When you load the DIF file, the topmost row is displayed as the leftmost column instead.

This feature is easier to understand if you see an example. If the DIF file shown in Figure 7-4 were loaded in row order instead of in column order, it would look like Figure 7-5.

	A	B	C	D	E	F	G	H
1	DIF Data		1000					
2	*							
3	1000		2000					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Figure 7-5. DIF File Loaded in Row Order

The entries that were in column A (DIF Data, *, and 1000) are now displayed in row 1. Likewise, the entries that were displayed in Row 3 (1000, 2000, and 3000) are now displayed in Column C.

LOCKING AND UNLOCKING A FILE

You can protect a file from being changed or deleted by using the Lock command. The Lock command is in the Utilities menu. You should lock all important worksheet files. If other people have access to your data disks and might inadvertently overwrite or delete one of your files, you have an added reason to lock your files.

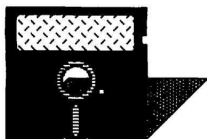
HOW TO USE THE LOCK COMMAND

1. Type **/S** to enter the Storage menu.

Note:

If the message Enter lower right or RETURN appears immediately after you type **/S**, press **(RETURN)**. Then press **(↓)** until the File Format option is highlighted. Press **(RETURN)** to highlight FlashCalc instead of DIF. Instructions for using DIF files are included in Unit 4.

2. Set the prefix to the disk that contains the file you want to lock.
3. Type **U** to display the Utilities menu.
4. Type **L** to select the Lock command. The list of file names on the disk appears. Just as with the Save and Load commands, type the file name or the number of the file you want to choose. Then press **(RETURN)**.
5. The list of file names is redisplayed with an asterisk displayed next to the file you just locked. You can continue selecting other files to be locked, or press **(ESC)** to return to the Utilities menu.



Saving and Loading Worksheets

If you try to delete the locked file, or save another worksheet to the same name, the program stops you.

To unlock a file, simply type **U** instead of **L** in step 4 to select the Unlock command.

The files on the FlashCalc program disk are locked, so you don't have to worry about accidentally deleting them. Two of the files are not locked. They are named VIDEO and FC.OPTION and make up the configuration file, which you **can** overwrite.

If you are curious to see the files on the program disk, follow the instructions in Unit 6 and set the prefix to the program disk's volume name.

DISPLAYING THE LIST OF FILE NAMES

You can see the list of file names stored on a given disk or directory with the Catalog command, which is part of the Utilities menu. The Catalog command displays **every** file name on the disk, including those stored by other programs.

HOW TO USE THE CATALOG COMMAND

1. Type **/S** to display the Storage menu.
2. Set the prefix to the name of the volume (or directory) that you want to view.
3. Then type **U** to display the Utilities menu.
4. Type **C** to select the Catalog command.

The list of file names is displayed. If **TXT** is displayed to the right of the name, it is either a worksheet file or a DIF file. Files you cannot load from the Storage menu (such as the program files on the FlashCalc program disk) have **BIN** displayed to the right.

The message **RETURN** to continue appears at the bottom of the screen. If the list of names is too long to be displayed on one screen, press **RETURN** to see the remainder of the list. Otherwise, pressing **RETURN** cancels the Catalog command.

INITIALIZING A DATA DISK

Before you can save a worksheet on a floppy data disk, you must initialize the disk. Initialization (also known as formatting) is a two-step process. It erases the disk, then prepares it to receive data. So, you should be careful that there is no data of value on any disk you initialize.

The Init command (from the Utilities menu) initializes a disk. It performs exactly the same function as the ProDOS "Format a Volume" command.

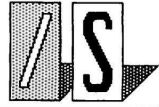
HOW TO USE THE INIT COMMAND

1. Type **/S** to enter the Storage menu. Don't worry about setting the prefix, you will specify the drive number later.
2. Type **U** to display the Utilities menu.
3. Type **I** to select the Init command. Insert the disk you want to initialize, as the Insert a new disk message prompts you.
4. Indicate the disk drive that contains the disk you want to initialize in the form **,D1** or **,D2**.
5. Press **(RETURN)**. The prompt line displays Init: Y to destroy /. If the disk currently has a volume name, it is displayed after the slash.

WARNING:

MAKE SURE THAT THIS IS A DISK YOU WANT TO ERASE.

6. This is your last chance to back out of erasing the disk. If you want to continue with the initialization, press **Y**. Pressing any other key cancels the process.



Initializing a Data Disk

7. Now the program prompts you to type a new volume name for the disk. Type any name you choose, limiting yourself to the characters specified under "Rules for Naming Directories and Files" in Unit 1.
8. Press **(RETURN)**. The disk drive whirs for a few seconds, then the Utilities menu appears. The prefix has been changed to the name of your newly initialized disk.

DELETING A FILE

You can delete a file from a disk with the Delete command, which is one of the commands in the Utilities menu. The Delete command *permanently erases* a file from the data disk. The command does not affect the worksheet that is currently in memory.

HOW TO USE THE DELETE COMMAND

1. Type **/S** to enter the Storage menu. If the message Enter lower right or RETURN appears, press **(RETURN)**. The message applies only when you are saving DIF files, so it need not concern you now.
2. Check to make sure the prefix corresponds to the disk volume that contains the file you want to delete. To change the prefix, refer to Unit 1 in this chapter for instructions.
3. Type **U** to display the Utilities menu, then type **D** to select the Delete command. The names of the files on the disk are listed.
4. Type the name or number of a file. Then press **(RETURN)** to delete it.
5. Repeat step 4 until you have deleted all of the files you want to. Press **(ESC)** to return to the Utilities menu.

MAKING BACKUP COPIES

Floppy disks are not indestructible. If a disk is damaged, you cannot load a file from it. This could obviously be disastrous to you.

A disk can be damaged in many ways. If you spill liquid on it, touch the disk surface with your fingers, leave it in the sun, or hold it near a magnet, it may be damaged. Even if you treat the disk properly, it will wear out eventually.

So, you should make it a regular practice to make duplicate copies of your worksheet files on separate disks. You can do this by saving a particular file twice (once on each of two disks), or by making a copy of an entire floppy disk.

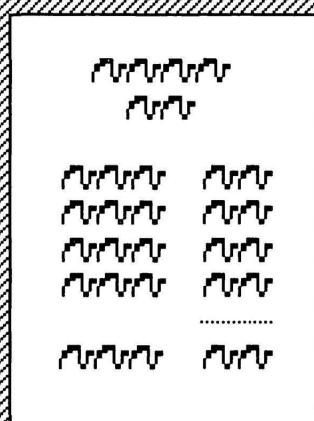
COPYING A FILE

Use the Save command (from the Storage menu) to make a backup copy of a file:

1. Insert the data disk that contains the file you want to copy into one of your disk drives.
2. Load the file as you usually would (refer to Unit 3 for details).
3. Insert an initialized disk into one of your drives, and change the prefix to correspond.
4. Save the file as you usually would (refer to Unit 2). Now you have two copies of the same worksheet on different disks.

COPYING A DISK

Use the ProDOS "Copy a Volume" command to make a complete duplicate of a disk. Refer to the *ProDOS User's Guide* for instructions on this procedure.

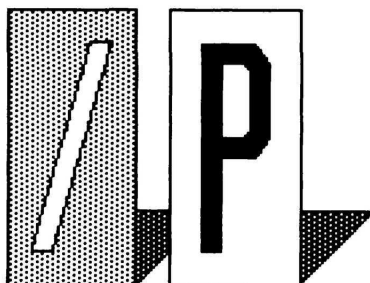


Printing Worksheets

Chapter 8 Printing Worksheets

Unit 1 Overview of the Print and Layout Menus	8-3
Introducing the Print Commands	8-4
Selecting Commands and Options	8-7
Using the ESC Key	8-7
Unit 2 Printing a Worksheet	8-8
How to Print a Worksheet	8-8
In Case of Overprinting	8-9
In Case of No Response from the Printer	8-9
Using the Print Options to Control the Printer	8-10
The Prefix Option	8-10
Entering the Upper Left and Lower Right Cells	8-10
Defining the Limits of the Printed Worksheet	8-11
The File Format and DIF™ Order Options	8-12
Selecting the Paper Feed Setting	8-13
Controlling the Line Spacing	8-13
Selecting Page Eject	8-14
Entering a Setup String	8-14
Printing Large Worksheets	8-15
Unit 3 Controlling the Printed Page Layout	8-16
The Horizontal Dimension	8-17
The Paper Width	8-17
The Left Margin	8-18
The Text Width	8-18
The Vertical Dimension	8-19
The Paper Length	8-19
The Top Margin	8-19
The Text Length	8-19
How to Change Any One of the Settings	8-20
Unit 4 Using Setup Strings to Control the Printer	8-21
The Elements of a Setup String	8-21
Unit 5 Printing the List of Cells in a Worksheet	8-23
Printing in DIF™ Format	8-23
Unit 6 Printing a Worksheet on a Data Disk	8-25
How to Use the Disk Command	8-25

OVERVIEW OF THE PRINT AND LAYOUT MENUS



PRINT

In response to Enter lower right or RETURN, type **[coord]** for partial worksheet, or **(RETURN)** for entire worksheet.

O Set options:

Prefix—Directory to store Disk command's print file.
Upper left—Upper left corner of area to be printed.
Lower right—Lower right corner of area to be printed.
File format—Formulas command will print worksheet in DIF or FlashCalc format.
DIF order—Formulas command will print DIF file in row or column order.
Paper feed—Set for single-sheets or continuous paper.
Print spacing—Set for single-, double-, or triple-spacing.

Page eject—Whether to advance to top of next page after printing.

Setup string—Control codes to be sent to your printer.

L Display Layout menu.

O Set Layout options:

Left margin—# of chars to skip before begin printing.

Text width—# of chars in each line.

Paper width—Width of page (in chars)

Top margin—# of lines to skip before begin printing.

Text length—# of lines to print on each page.

Paper length—Length of page (in lines)

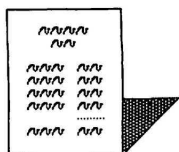
P Return to Print menu.

P Print worksheet.

D Save print file on disk.

F Print list of cells and contents.

C Return to worksheet.



Printing Worksheets

This unit introduces you to the Print and Layout menus and teaches you how to move from one menu to another. You can make printed copies of your worksheet at any time using the Print and Layout menus. The Print command produces an image of the worksheet just as it appears on the screen (not including the status areas or the row and column numbers). The options in the Print menu and in the Layout menu let you vary the way the worksheet prints.

Note:

It is a good practice to save your worksheet on disk (with the Save command in the Storage menu) before you print it. Refer to Chapter 7 for instructions on saving a worksheet.

To see the Print menu, type **/P** now. When the message Enter lower right or RETURN appears, just press **(RETURN)** for now. We'll explain the purpose of this prompt later.

Your screen should look like Figure 8-1.

INTRODUCING THE PRINT COMMANDS

The top line of the screen is unchanged from the FlashCalc™ worksheet screen. The prompt line gives you instructions on how to use the Print menu. The edit line is what we are concerned with now; it contains the menu commands.



Overview of the Print and Layout Menus

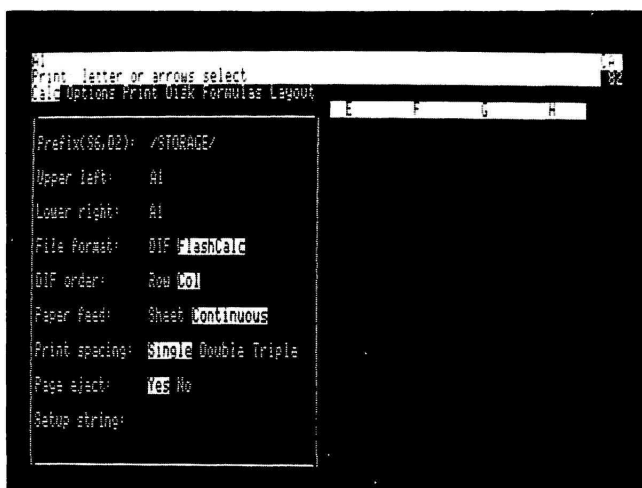
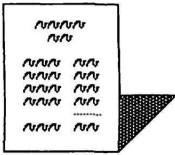


Figure 8-1. The Print Menu

Command What It Does

Calc	Returns the worksheet to the screen.
Options	Moves the cursor to the list of Print options.
Print	Prints the worksheet on a printer. The Print command is explained in Unit 2.
Disk	Saves the worksheet on disk in the same format as for printing. The Disk command is explained in Unit 6.
Formulas	Prints the list of cells in the worksheet along with their contents. The Formulas command is explained in Unit 5.
Layout	Displays the Layout menu, where you can choose to change the dimensions of the printed page. The Layout command is explained in Unit 3.



Printing Worksheets

The Print options are listed below the commands. They are explained in Unit 2.

The Layout command displays the Layout menu. Type **L** now to see the Layout menu. Your screen should look like Figure 8-2.

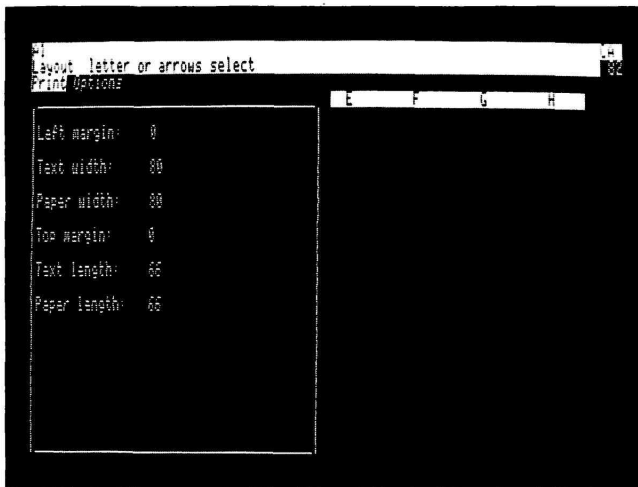


Figure 8-2. The Layout Menu

Command What It Does

- | | |
|---------|---|
| Print | Returns the Print menu to the screen. |
| Options | Moves the cursor to the list of Layout options. |

If you choose to fill out the Layout options, you can change the margins of each printed page. The Layout options are explained in Unit 3.



SELECTING COMMANDS AND OPTIONS

The cursor should still be on the Print command, because you just selected the Layout command to view the Layout menu.

To move the cursor from one command to another, press **←** or **→**. To select a highlighted command, you press **RETURN**. A shortcut method is to type the first letter of the command you want to select (remember that you typed **L** to select the Layout command).

Type **P** now to return to the Print menu.

To move the cursor to the list of options, either select the Options command, or just press **↓**, whichever is more convenient for you.

To fill out one of the options in the list, you press **↓** or **↑** until that option is highlighted. Then, you press **RETURN**. Depending on the option, pressing **RETURN** either selected the option or changed the option from one setting to another. The specifics on using the options are explained in Unit 2.

USING THE ESC KEY

The **ESC** key is handy for “backing out” of wherever you’ve gotten yourself in the program. For instance, pressing **ESC** while the cursor is in the list of options moves the cursor to the Calc command. Pressing **ESC** while the cursor is highlighting one of the commands in the Layout menu takes you to the Print menu. Pressing **ESC** from one of the Print menu commands returns you to the worksheet. If you ever select a command and change your mind, **ESC** cancels it.

Press **ESC** now to return to the worksheet. Depending on whether you moved the cursor to the list of Print options, you may need to press **ESC** more than once to return to the worksheet.

PRINTING A WORKSHEET

If you printed successfully during the *QuickStart Course*, you are ready to print more worksheets. If you had trouble, try again, following the steps below.

HOW TO PRINT A WORKSHEET

The FlashCalc program includes many options for enhancing the appearance of the printed worksheet, but the basic steps are as follows:

1. Load the worksheet you want to print. If it is already on the screen, save it on disk. Instructions on saving and loading are in Chapter 7.
2. Make sure the printer is turned on and that it is online. Refer to your printer manual if you need help. If you have the Apple Imagewriter printer, it is online if the SELECT light is on.
3. Move the cursor to the upper-left cell of the rectangular area that you want to print.
4. Type **/P** to display the Print menu.
5. In response to the Enter lower right or RETURN prompt, press **(RETURN)** if you want to print the entire worksheet.

If you want to print only a portion of the worksheet, type (or use the arrow keys to point to) the coordinates of the cell at the lower-right corner of the area you want to print, and press **(RETURN)**.

The program displays the Print menu.

6. Type **P** to select the Print command. Position paper, press RETURN appears in the prompt line.
7. Adjust the paper in the printer so that the printer head is just below the top of the sheet. Refer to your printer manual for instructions.
8. Press **(RETURN)**.



The printer should start printing the worksheet. If you want to stop the printer for any reason, press **(ESC)**, which returns the worksheet to the screen. To continue printing, you must reenter the Print menu.

In Case of Overprinting

If printing begins, but the printer prints each line over the same place on the paper without advancing the paper, press **(ESC)** to stop printing. Then do the following:

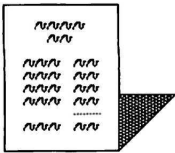
- Press **(↓)** until the Print Spacing option is highlighted.
- Press **(RETURN)**. The highlighting moves from Single to Double.
- Repeat steps 6 through 8 above to print the worksheet. Refer to "Controlling the Line Spacing" in this chapter if you want more details about print spacing.

In Case of No Response from the Printer

If the printer doesn't start printing (the Position paper prompt is still displayed) after you pressed **(RETURN)**, do the following:

- Turn off the printer and the computer.
- Make sure the cable that runs from the printer to the computer is securely inserted into the printer. Check your printer manual if you need help, or call your computer dealer.
- Reload the FlashCalc program, as explained in the *Getting Started Guide*.
- Repeat steps 1 through 8 above to print the worksheet.

If the printer still doesn't print, press **(CTRL)-(RESET)** (hold down the **(CTRL)** key while you press the **(RESET)** key). The worksheet returns to the screen. See Appendix D now for instructions.



USING THE PRINT OPTIONS TO CONTROL THE PRINTER

You use the Print options to determine the number of cells to be printed in the worksheet and to specify the mechanics of how your printer will print.

When you follow the basic steps for printing (under "How to Print a Worksheet"), some of the Print options are automatically filled out for you. You may need to fill out other options, depending on how you want the worksheet to be printed. You must fill out the options before you select the Print command to print the worksheet. These options are explained in the following sections.

To display the Print menu, type **/P**; then press **(RETURN)**.

The Prefix Option

Ignore the Prefix option here. Its setting makes no difference when you are printing a worksheet, because the program doesn't need to access a disk. The setting for the Prefix option is important when you use the Disk command, which is explained in Unit 6.

Entering the Upper Left and Lower Right Cells

The settings for the Upper Left and Lower Right options indicate the part of the worksheet that will be printed. When you follow the basic procedure to print part or all of a worksheet (under "How to Print a Worksheet"), the settings for the Upper Left and Lower Right options are entered for you.

- The position of the cursor when you type **/P** determines the entry for the Upper Left option.
- Your response to the Enter lower right or RETURN prompt determines the entry for the Lower Right option.



Defining the Limits of the Printed Worksheet

If you type or point to cell coordinates in response to the Enter Lower Right or RETURN prompt, then press **(RETURN)**; those coordinates are entered for the Lower Right option. Figure 8-3 shows the positions of the cells you specify in relation to the area of the worksheet that is printed.

Upper-Left Cell

	A	B	C	D	E	F
1	11111	22222	33333	44444	55555	66666
2	11111	22222	33333	44444	55555	66666
3	11111	22222	33333	44444	55555	66666
4	11111	22222	33333	44444	55555	66666
5	11111	22222	33333	44444	55555	66666
6	11111	22222	33333	44444	55555	66666
7	11111	22222	33333	44444	55555	66666
8	11111	22222	33333	44444	55555	66666
9						

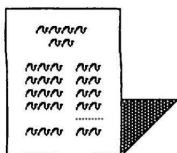
Shaded area will be printed

Lower-Right Cell

Figure 8-3. Area of a Worksheet to Be Printed

If you just press **(RETURN)** in response to the Enter lower right or RETURN prompt, the program enters the lower-right limit so that the entire worksheet will be printed.

The *lower-right limit* defines the rectangle that includes every cell in the worksheet that contains an entry. The lower-right limit could be a blank cell, as shown in Figure 8-4.



Printing Worksheets

	A	B	C	D	E	F
1	11111	22222	33333		55555	
2	11111	22222	33333	44444	55555	66666
3	11111	22222	33333	44444	55555	66666
4	11111	22222		44444	55555	66666
5	11111			44444	55555	66666
6	11111			44444		66666
7	11111			44444		66666
8	11111					
9	11111					
10	11111					
11	11111					
12	11111					
13						

Lower-Right Limit

Figure 8-4. The Lower-Right Limit of a Worksheet

You would use the Upper Left or Lower Right options only if you change your mind about what part of the worksheet to print. After you have displayed the Print menu, follow these steps to change the Upper Left or Lower Right setting:

1. Press **↓** until the option you want to change is highlighted.
2. Press **RETURN**. The message Print: Enter col, row appears.
3. Type the coordinates of the cell you want to enter as the setting.
4. Press **RETURN**.

The File Format and DIF™ Order Options

Ignore the File Format and DIF™ Order options when you are using the Print command to print a worksheet. These options apply only to the Formulas command, which prints a list of the



cells in the worksheet along with their background formulas, formats, and attributes. The Formulas command is explained in Unit 5.

Selecting the Paper Feed Setting

The Paper Feed option is initially set to Continuous, which is appropriate for computer paper that has tear-apart sheets. If you want to feed a single sheet at a time into your printer, you need to change the Paper Feed setting to Single.

To change the setting:

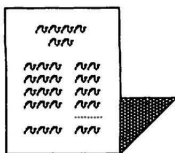
1. Use the arrow keys to move the cursor to the Paper Feed option.
2. Press **(RETURN)**. The highlighting moves from one setting to the other.

Controlling the Line Spacing

The Line Spacing option controls the number of blank lines between each printed line. For instance, the Single setting causes the printer to print the lines single-spaced, with no blank lines in between. Likewise, the Double setting prints the lines double-spaced, with one blank line between each printed line, and the Triple setting prints the lines triple-spaced, with two blank lines between each printed line.

To change the Printer Spacing option setting:

1. Use the arrow keys to move the cursor to the Printer Spacing option.
2. Press **(RETURN)**. The highlighting moves from left to right across the line to highlight the next setting. Each time you press **(RETURN)**, the highlighting moves to the right one setting. When it reaches the end of the line, it starts back at the beginning. Stop pressing **(RETURN)** when the setting you want is highlighted.



Printing Worksheets

When the Printer Spacing option is set to Single, the FlashCalc program does not send a line feed to the printer at the end of each line; it just sends a carriage return. This causes single-spaced printing if your printer or its interface card has a switch set to produce a line feed after each carriage return it receives.

If all of the lines in your worksheet are printed on top of each other on the same line of the page, you need to change the switch setting on your printer or the interface card. Or, you can just change the FlashCalc Printer Spacing option to Double. Then, your worksheets will be printed single-spaced.

Selecting Page Eject

The Page Eject option controls whether the printer will automatically advance to the top of the next sheet after it prints the last line of a worksheet. Leave this option set to Yes if you want to start a new page each time you use the Print command. The No setting is useful if you want to print sections of two different worksheets on the same page.

To change the setting:

1. Use the arrow keys to highlight the Page Eject option.
2. Press **(RETURN)**.

Entering a Setup String

A setup string is a series of characters that instructs your printer to print in a special way. Setup strings can be used to print characters close together, spaced apart, bold, underlined, and so on. Every printer has its own setup strings (also known as *control codes*) that govern its behavior.

Detailed instructions for using setup strings are included in Unit 4.

You can edit a setup string the same way you can edit a prefix. Refer to Chapter 7 for directions on entering an existing prefix.



Note:

You can save a file (called the *configuration file*), that contains the settings for the Paper Feed, Print Spacing, Page Eject, and Setup String options. The Layout menu option entries are saved in the configuration file also. The configuration file is intended mainly for saving information about your computer hardware, but the current printer information is also saved.

If you want to have your particular print settings in effect each time you load the program, follow the instructions in Appendix D to save a configuration file.

PRINTING LARGE WORKSHEETS

You may specify an area to be printed that is wider or longer than the dimensions of one printed page. The program prints the entire worksheet by printing as many pages as necessary down the rows in the first set of columns until it reaches the last row. Then it starts a new page and moves right to the next set of columns and prints down its rows, and so on, until it reaches the last set of columns, as shown in Figure 8-5.

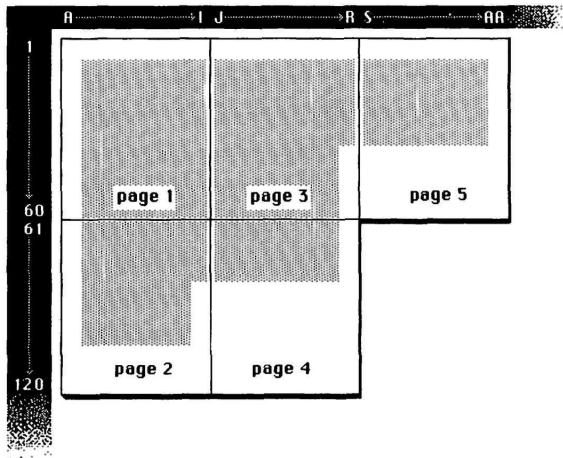


Figure 8-5. Printing Large Worksheets

CONTROLLING THE PRINTED PAGE LAYOUT

You use the options in the Layout menu to change the initial settings for the width and length of each printed page. You display the Layout menu by selecting the Layout command from the Print menu.

You should enter the settings for the Layout options before you select the Print command to print a worksheet. This unit explains how to set the Layout option settings. The Print menu and ways to print the worksheet are explained in Unit 2.

The Layout options have initial settings appropriate for 8 1/2" by 11" sheets of paper. You need to change the Layout option settings if:

- You want to print on paper that is larger or smaller than 8 1/2" by 11".
- You want to print with larger margins (more white space) around the edges of the printed characters.
- You used a setup string to change the number of characters printed horizontally per inch. If you expanded or condensed the number of characters that would fit on the page, you would need to change the Layout option settings.
- You changed the Print Spacing option to print double- or triple-spaced.

To display the Layout menu, type **L** from the Print menu. The top three Layout options, Left Margin, Text Width, and Paper Width control the horizontal dimension of each printed page. The bottom three options, Top Margin, Text Length, and Paper Length determine the vertical dimension. Figure 8-6 is a sample printed page showing where each option affects the dimension of the page.

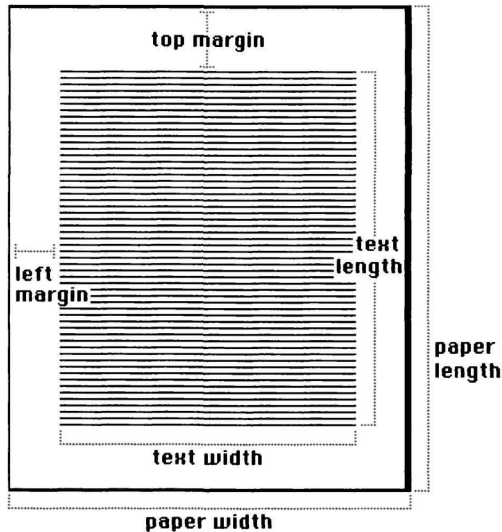


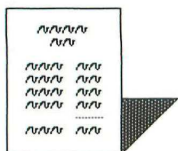
Figure 8-6. Effects of the Layout Options

THE HORIZONTAL DIMENSION

Three options affect the horizontal dimension of each page: Left Margin, Text Width, and Paper Width. The settings for the three options work together to determine the size of the left and right margins on the printed page. This section discusses the options in a slightly different order than the order shown on the screen.

The Paper Width

The Paper Width is the number of characters that would fit on a line across the piece of paper. The option is initially set to 80, because 80 characters (at 10 characters to the inch) fit comfortably across the width of an 8 1/2" wide sheet. Some printers can handle wider paper, so you might increase the setting to 100, for instance. You can figure out how many characters will fit across the page by measuring the inches and multiplying by 10.



Printing Worksheets

If you use a setup string to change the character width (also known as the pitch) of the printed characters, you should also change the Paper Width setting. For instance, if you enter a setup string to change to condensed type (17 characters to the inch on many printers), more characters (136 in this case) can fit on each line. If you change to expanded type, fewer characters can fit on the line.

The Left Margin

The Left Margin option defines how many spaces from the left of the page to skip before printing starts. The option is initially set to 0, which allows a two- or three-character-wide margin on 8 1/2" wide paper. To allow room at the left for handwritten notations or for the pages to be bound together in a loose-leaf folder, you should increase the setting. A setting of 10 allows an additional one-inch of margin.

If you changed the character width with a setup string, the setting is based on the new character width. For instance, if you changed to elite type (12 characters per inch) a setting of 12 allows an additional one-inch of margin.

The Text Width

The Text Width option defines the number of characters to be printed on each line, starting from the point of the Left Margin setting. The initial setting is 80 to allow for the maximum number of characters to be printed on an 80-character width page.

The Text Width and the Left Margin added together must not be greater than the Paper Width. If you enter too large a number for the Text Width, the program doesn't allow you to leave the Layout menu until you change the Text Width setting.



THE VERTICAL DIMENSION

Three options affect the vertical dimension of each page: Top Margin, Text Length, and Paper Length. The settings for the three options work together to determine the size of the top and bottom margins on the printed page. This section discusses the options in a slightly different order than the order shown on the screen.

The Paper Length

The Paper Length is the number of lines that would fit down the piece of paper. The option is initially set to 66, because 66 lines (at 6 lines to the inch) fit on an 11" long sheet. If you are printing on long paper, you need to increase the setting. You can figure out how many lines will fit down the page by measuring the inches and multiplying by 6.

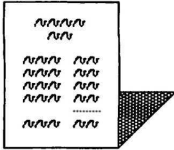
The Top Margin

The Top Margin option defines how many lines from the top of the page to skip before printing starts. The option is initially set to 0, which starts printing where the printhead is resting when you select the Print command. To allow more white space at the top of each page, increase the setting. A setting of 6 allows an additional one-inch of margin.

The Text Length

The Text Length option defines the number of lines to be printed on each page, starting from the point of the Top Margin setting. The initial setting is 66 to allow for the maximum number of lines to be printed on an 11" page.

The Text Length and the Top Margin added together must not be greater than the Paper Length. If you enter too large a number for the Text Length, the program doesn't allow you to leave the Layout menu until you change the Text Length setting.



Printing Worksheets

Note:

You can use the Print Spacing option (in the Print menu) to change to double- or triple-spacing. If you do so, you must change the settings of the vertical dimension options. For instance, if you print double-spaced, the printer can fit only half as many lines on the paper, so you would divide the three vertical option settings by two. Likewise, if you print triple-spaced, divide the settings by three.

HOW TO CHANGE ANY ONE OF THE SETTINGS

All of the option settings in the Layout menu are changed in the same way:

1. Move the cursor to the option you want to change.
 2. Press **(RETURN)**. The prompt line displays the minimum and maximum values it allows you to enter for the option.
 3. Type the new setting you want.
 4. Press **(RETURN)**.
-

Note:

The program cannot check for incorrect settings for the Paper Width or Paper Length options. If you enter too large a number for either of those options, you could cause the printer to print beyond the right edge of the paper, or to print over the perforation that separates two pages.

USING SETUP STRINGS TO CONTROL THE PRINTER

Some printers allow you to issue special instructions for enhancing the appearance of your printouts. These special instructions are called *control codes*.

Read your printer's reference manual to determine whether the printer accepts control codes. You may choose never to use control codes, but they are useful and convenient. Using control codes, you can:

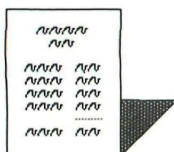
- Print characters smaller and closer together, allowing you to fit a wider worksheet on a single page.
- Expand the width of a line of characters, for emphasis.
- Make characters print darker.

Most control codes affect the entire worksheet. They will continue to be in effect until you turn off the printer, or until you use another code to turn off the first one. For instance, after you use the control code for condensed (narrower) printing, you must use another control code to return to normal-width printing.

THE ELEMENTS OF A SETUP STRING

Within the FlashCalc program, you send control codes to your printer by way of the Setup String option in the Print menu. A setup string represents the control codes that your printer accepts. In addition to control codes, a setup string can include actual characters to be printed as a heading to your worksheet.

You must use special characters within a setup string to enter control codes in the FlashCalc program. It all depends on how your printer manual expresses control codes.



Printing Worksheets

If your printer manual lists:	Type:
ESCAPE sequences or codes	ΛE before the one-character code
CONTROL sequences or codes	ΛC before the one-character code
HEXADECIMAL numbers	ΛH before the two hexadecimal characters

For instance, the Apple Imagewriter manual lists ESCAPE Q as the control code for ultracondensed (17 characters to the inch) printing. To use the ESCAPE Q code in the FlashCalc program, just type ΛEQ for the Setup String option in the Print menu; then print the worksheet.

Likewise, the Apple Imagewriter manual lists CONTROL-N as the control code to begin headline mode (large, expanded characters). To use the CONTROL-N code, type ΛCN for the Setup String option.

The Apple Imagewriter manual also lists the hexadecimal number 0E as the equivalent of the CONTROL-N code. This means you could type $\Lambda H0E$ for the Setup String option to produce the headline mode.

Other codes you can use are ΛR (to produce a return character), ΛL (to send a linefeed character), and $\Lambda \wedge$ (to print a caret (\wedge) character).

SELECT "LAYOUT"

SET PAPER WIDTH TO 136

SET TEXT WIDTH TO 136

PRINTING THE LIST OF CELLS IN A WORKSHEET

The Formulas command (in the Print menu) prints a list of the cells in the worksheet. Included are the cell's coordinates, its contents, and any format or attribute assigned to it. If a cell contains a formula, the formula is listed, not its displayed value. If the worksheet has a global attribute or format, it is printed at the end of the list.

This list is complete enough that you could reenter a worksheet should your disk become damaged, or should you accidentally delete or overwrite a file.

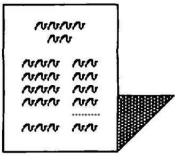
The Print options (except File Format and DIF Order), and the Layout options all affect the printed list just as with a worksheet printed with the Print command. The exceptions are the Upper Left and Lower Right options; no matter what their settings, the Formulas command includes every cell in the worksheet in the printed list.

To print the list of cells in a worksheet, follow the procedure for printing a worksheet, as explained in Unit 2, except:

- Instead of selecting the Print command, type **F** to select the Formulas command. The message Print: Position paper, press RETURN appears.
- When you press **(RETURN)**, the worksheet is printed cell-by-cell, from the lower-right cell to the upper-left cell. Each entry position takes one line, so a lot of paper is required to print a worksheet.

PRINTING IN DIF™ FORMAT

When you print DIF files with the Print command, they appear no different from worksheet files, but if you print them with the Formulas command, you see how the DIF format actually stores data. This would be of interest to you only if you want to write your own programs using the DIF format.



Printing Worksheets

The File Format and DIF Order options are included in the Print menu just for use by the Formulas command. If you load a DIF file and set the File Format option to DIF, the Formulas command will print the DIF file in DIF format. You can also use the DIF order option to change from column to row order.

If you are curious about the way the DIF format actually stores data, this printout shows you. Be aware that printing in DIF format uses a great deal of paper. If you want to stop printing, you can cancel the printing process by pressing **(ESC)**.

PRINTING A WORKSHEET ON A DATA DISK

The Disk command (in the Print menu) creates an image of the worksheet that is identical in format to the worksheet generated by the Print command. The difference is that the worksheet is saved on a data disk with the Disk command, instead of being sent to the printer.

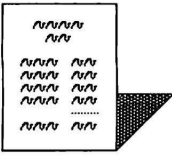
Unlike the Save command in the Storage menu, the Disk command creates a copy of a worksheet (called a *print file*) that you can load into other programs. For instance, you might print a worksheet with the Disk command and load it into a word processing program. Then you could write a report and include the worksheet within it. If you are connected to another computer by way of a modem, you could send the file saved by the Disk command.

The file created by the Disk command is governed by the same options as a printed worksheet; the options in the Print menu and in the Layout menu have the same effect on its appearance. This means that you don't have to save the entire worksheet on disk; the Upper Left and Lower Right options still determine which cells are included in the "printed" worksheet.

HOW TO USE THE DISK COMMAND

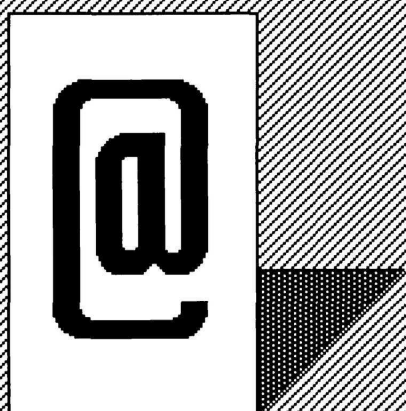
To save a print file on disk, follow the procedure for printing a worksheet, as explained in Unit 2, except:

- Change the Prefix option to correspond to the disk onto which you want to save the file.
- Instead of selecting the Print command, type **D** to select the Disk command.
- Type the name you want to enter for the print file.
- After you enter the name or number of the print file, press **(RETURN)**. The print file is saved on the disk and the worksheet returns to the screen.



Printing Worksheets

If you don't want the print file to break at the end of each page, change the Layout option settings before using the Disk command. Set the Page Length to 1, the Text Length to 1, and the Top Margin to 0. You can make the contents of the print file as wide or narrow as you like with the Page Width, Text Width, and Left Margin options.



Using the Special
FlashCalc™ Functions

Chapter 9 Using the Special FlashCalc™ Functions

Unit 1 Overview of FlashCalc™ Functions	9-5
Why Use the FlashCalc Functions?	9-5
What Are the Parts of a FlashCalc™ Function?	9-5
What Are the FlashCalc Functions?	9-7
Unit 2 The FlashCalc™ Mathematical Functions	9-8
Absolute Value — @ABS(v)	9-8
Average — @AVERAGE(list)	9-10
Cosine — @COS(v)	9-11
Count — @COUNT(list)	9-12
Exponential Value — @EXP(v)	9-13
Integer Value — @INT(v)	9-13
Natural Logarithm — @LN(v)	9-14
Logarithm Base 10 — @LOG10(v)	9-14
Maximum Value — @MAX(list)	9-15
Minimum Value — @MIN(list)	9-16
Pi — @PI	9-17
Rounded Value — @ROUND(v,Number of Decimal Places) ...	9-17
Sine — @SIN(v)	9-19
Square Root — @SQRT(v)	9-19
Sum — @SUM(list)	9-20
Tangent — @TAN(v)	9-21
Unit 3 Special Purpose FlashCalc™ Functions	9-22
Choose — @CHOOSE(v,list)	9-22
Column — @COL	9-24
Error — @ERROR	9-25
Lookup — @LOOKUP(v,range)	9-26
Not Available — @NA	9-28
Row — @ROW	9-28

Unit 4 FlashCalc™ Logic Functions	9-30
Examples of Logical Choices	9-30
How Logical Statements Are Evaluated	9-31
And — @AND(List of Logical Comparisons)	9-32
False — @FALSE	9-33
If — @IF(Logical Comparison,v1,v2)	9-34
Is Error — @ISERROR(v)	9-36
Is Not Available — @ISNA(v)	9-37
Not — @NOT(Logical Comparison)	9-38
Or — @OR(List of Logical Comparisons)	9-39
True— @TRUE.....	9-40
Unit 5 FlashCalc™ Financial Functions	9-41
Things to Remember as You Use the Financial Functions	9-42
Future Value — @FV(i,n,pmt,pv)	9-43
Internal Rate of Return — @IRR(investment,range)	9-45
Net Present Value — @NPV(i,range)	9-46
Number of Periods — @PERIODS(i,pmt,pv,fv)	9-48
Payment Amount — @PMT(i,n,pv,fv)	9-49
Present Value — @PV(i,n,pmt,fv)	9-50
Interest Rate — @RATE(n,pmt,pv,fv)	9-51



OVERVIEW OF FLASHCALC™ FUNCTIONS

WHY USE THE FLASHCALC™ FUNCTIONS?

The special FlashCalc functions are formulas built into the program. These functions save you time by doing a wide range of work for you, such as:

- Adding or averaging numbers.
- Finding logarithmic and trigonometric values from built-in tables.
- Performing financial calculations.

You will probably want to use the special FlashCalc™ functions as much as possible to simplify your job when you create or change your worksheets.

WHAT ARE THE PARTS OF A FLASHCALC™ FUNCTION?

FlashCalc functions require you to enter an @ sign, the function name, and, in most cases, one or more arguments.

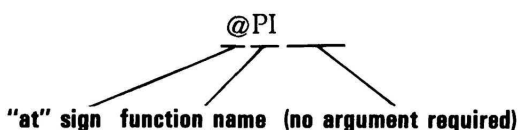
The following examples show you what typical FlashCalc functions might contain:

@AVERAGE(A1, A2, A3)
"at" sign function name list of single values

@SUM(A1...A5)
"at" sign function name range of values



Using the Special FlashCalc™ Functions



Most FlashCalc functions use arguments, which are enclosed in parentheses after the function name. Arguments are values you use in a function to calculate a result.

As the previous examples show, arguments can be a single value, a list of single values, or a range of values. A value may be a number, a cell reference, a function, or a formula.

The description of each function in this chapter lists the types of values which can be used in the argument(s) for that function.

The following information will help you enter arguments correctly:

- When you enter multiple values in a list, you must separate each value from other values with commas. For example, you could add the values in cells A1 through A5, A7, and A9 with the @SUM function:

@SUM(A1...A5,A7,A9)

The range of cells A1 through A5 is the first entry, the single values A7 and A9 are the second and third entries separated from each other with commas.

- When you type in a range of cells, you need type in only a period to separate the beginning and ending cell in the



range; for example, @SUM(A1..A5). This range is displayed on the edit line on your screen as SUM(A1...A5). The FlashCalc program automatically translates the period you entered into three periods called an ellipsis.

Throughout this chapter, examples of ranges will contain an ellipsis, though you need to type in only one period when you enter a range of values.

- The number of parentheses in a function must balance; that is, there must always be the same number of left and right parentheses. You will want to keep this in mind if you use several functions together.
- Empty cells or cells containing labels are not used by functions in calculations.

WHAT ARE THE FLASHCALC™ FUNCTIONS?

There are four groups of FlashCalc functions:

- Mathematical
- Special Purpose
- Logic
- Financial

You will find a description of each of these functions in the units in this chapter. The functions in each unit are arranged in alphabetical order for easy reference, and are listed at the beginning of each unit.

As you read about the functions, you may want to try some of them yourself and see how easy they are to use.

THE FLASHCALC™ MATHEMATICAL FUNCTIONS

The FlashCalc mathematical functions find selected mathematical values for you. Using these functions, you can save the time it would take you to add, divide, scan a list of values, or look up numbers in tables.

@ABS	Absolute Value
@AVERAGE	Average of Values in a List
@COS	Cosine of a Number
@COUNT	Number of Values in a List
@EXP	Exponential Value
@INT	Integer Value
@LN	Natural Logarithm of a Number
@LOG10	Logarithm Base 10 of a Number
@MAX	Maximum Value in a List of Values
@MIN	Minimum Value in a List of Values
@PI	Value of PI
@ROUND	Value Rounded
@SIN	Sine of a Number
@SQRT	Square Root of a Number
@SUM	Sum of a List of Values
@TAN	Tangent of a Number

ABSOLUTE VALUE — @ABS(v)

The Absolute Value function finds the value of an argument without regard to its sign. In other words, the absolute value of both 35 and -35 is 35.

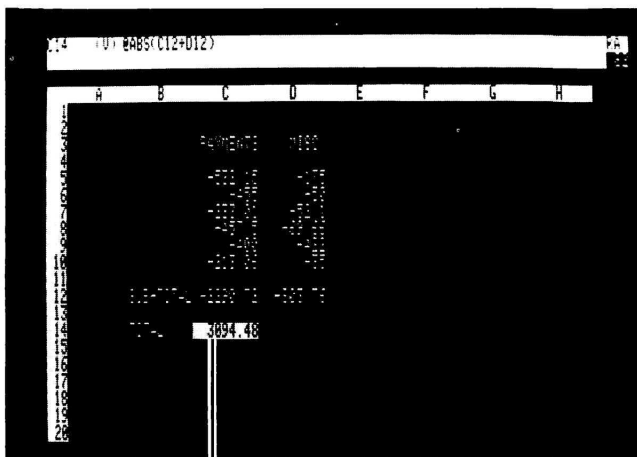


The FlashCalc™ Mathematical Functions

The argument can be: cell reference
number
function
formula

Sample entries are: @ABS(B7)
@ABS(C10/C3)
@ABS(@SUM(C10...C14))

Example of use: You could create a worksheet on which you record payments and other costs figures and use the total cost amount without a minus sign on a summary report, as shown in Figure 9-1.



The formula in this cell is: @ABS(C12+D12)

Figure 9-1. The Absolute Value Function



Using the Special FlashCalc™ Functions

AVERAGE — @AVERAGE(list)

The Average function finds the average of a list of values. The average is the total of the list divided by the number of entries in the list. Cells which contain labels or are empty are not used by the Average function.

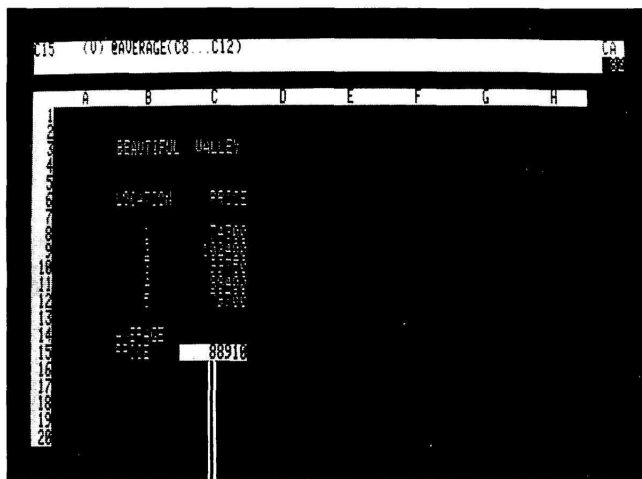
The arguments can be:

- cell references
- numbers
- range(s)
- functions
- formulas

Sample entries are:

- @AVERAGE(B1,B2,B3,B4)
- @AVERAGE(B1...B4)
- @AVERAGE(B1,B4...B9)

Example of use: In Figure 9-2, the AVERAGE function is used to find the average home price for an area.



The formula in this cell is: @AVERAGE(C8...C12)

Figure 9-2. The Average Function



COSINE — @COS(v)

The Cosine function finds the cosine of an angle.

The argument can be: cell reference
 number
 function
 formula

The argument must be a value in radians (2 pi radians equal 360 degrees; 2 radians equal $360/\pi$).

Sample entries are: @COS(C1/C8)
 @COS(B4)

Example: @COS(1.9836) equals — .401179.



Using the Special FlashCalc™ Functions

COUNT — @COUNT(list)

The Count function gives you the total number of values in a list. Zeros are counted, but labels and empty cells are not.

The arguments can be:

- cell references
- numbers
- range(s)
- functions
- formulas

Sample entries are: @COUNT(G2...G7)
 @COUNT(G2,G4,G10...G17)

Example of use: You want to keep track of the number of club members who have contributed money for a contingency fund. Figure 9-3 shows the Count function to determine the number of members contributing.

	A	B	C	D	E	F	G	H
10		MEMBERS	CONTRIB.					
11		ABEY	25					
12		BROWN						
13		JOHNSON	15					
14		JOHNS						
15		JOHNS						
16		PUTTER						
17		ROBERTS						
18		SMITH						
19		WATSON						
20		WHITE						
21		WILSON						
22		TOTAL						
23		CONTRIB.						
24			7					

The formula in this cell is: @COUNT(C5...C15)

Figure 9-3. The Count Function



EXPONENTIAL VALUE — @EXP(v)

The Exponential Value function finds the exponential value for the number given in the argument. The exponential value is the value of the mathematical constant e when raised to the power given in the argument. The constant e is 2.718281828.

Enter the number 1 as the argument if you want to find only the value of e .

The argument can be: cell reference
number
function
formula

Sample entries are: @EXP(D29)
@EXP(F1-B3)

Example: EXP(2.8945) equals 18.07446.

INTEGER VALUE — @INT(v)

The Integer function finds the integer value of a number; that is, the whole number without the decimal portion. The value is not rounded.

The integer value for a number will be the value subsequently used by the program in calculations.

The argument can be: cell reference
number
function
formula

Sample entries are: @INT(D11)
@INT(C4*C7)

Example: @INT(B12) equals 322 when B12 contains the value 322.578.



NATURAL LOGARITHM — @LN(v)

The Natural Logarithm function gives the natural logarithm of a number. The resulting value is the power to which the base e is raised to produce the value (v). The value of base e is 2.718281828.

The argument can be: cell reference
 number
 function
 formula

The argument must be positive, and not zero.

Sample entries are: @LN(2.1934)
 @LN(F3)

Example: @LN(D2) equals 1.187270 when D2
 contains the value 3.27812.

LOGARITHM BASE 10 — @LOG10(v)

The Logarithm Base 10 function returns the logarithm of an argument to base 10 (decimal logarithm). The value calculated is the power to which 10 is raised to produce the value (v).

The argument can be: cell reference
 number
 function
 formula

The argument must be positive, and not zero.

Sample entries are: @LOG10(2.7834)
 @LOG10(B22)

Example: @LOG10(D22) equals .6899532 when
 D22 contains the value 4.89726.



MAXIMUM VALUE — @MAX(list)

The Maximum function searches a list for the largest numeric value.

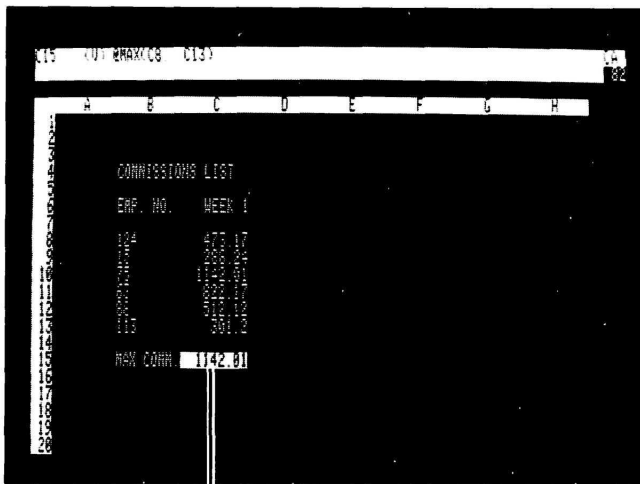
The arguments can be:

- cell references
- numbers
- range(s)
- functions
- formulas

Sample entries are:

- @MAX(B8...B17)
- @MAX(C1,D4,G12...G19)
- @MAX(B4/12,D12*C2,B5/B8)

Example of use: Figure 9-4 shows a list of commissions earned by salespersons for one week. You could select the highest commission earned using the Maximum function.



The formula in this cell is: @MAX(C8...C13)

Figure 9-4. The Maximum Function



Using the Special FlashCalc™ Functions

MINIMUM VALUE — @MIN(list)

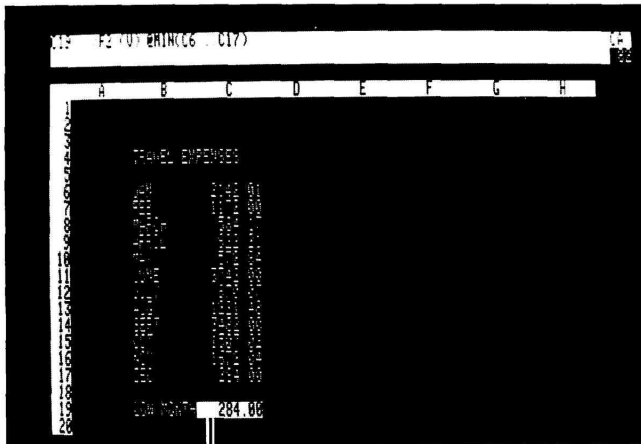
The Minimum function searches a list for the smallest numeric value.

The arguments can be:

- cell references
- numbers
- range(s)
- functions
- formulas

Sample entries are: @MIN(G4...16)
 @MIN(B2...B15,C7...C14)

Example of use: You may want to know the lowest amount paid out in a category of expenses. Figure 9-5 shows the lowest amount paid for travel expenses during a year.



The formula in this cell is: @MIN(C6...C17)

Figure 9-5. The Minimum Function



PI — @PI

Pi is the ratio of the circumference of a circle to its diameter, and evaluates to 3.1415926536.

No argument is required for the Pi function.

ROUNDED VALUE — @ROUND(v,number of decimal places)

The Round function rounds a given value to the number of decimal places in the second argument. This rounded value will be used by the program in subsequent calculations.

A positive number for the number of decimal places rounds the value to the right of the decimal point; a negative number rounds the value to the left. For example, @ROUND(104.123,2) rounds to 104.12, while @ROUND(104.123,-2) rounds to 100.

The value argument
can be:

cell reference
number
function
formula

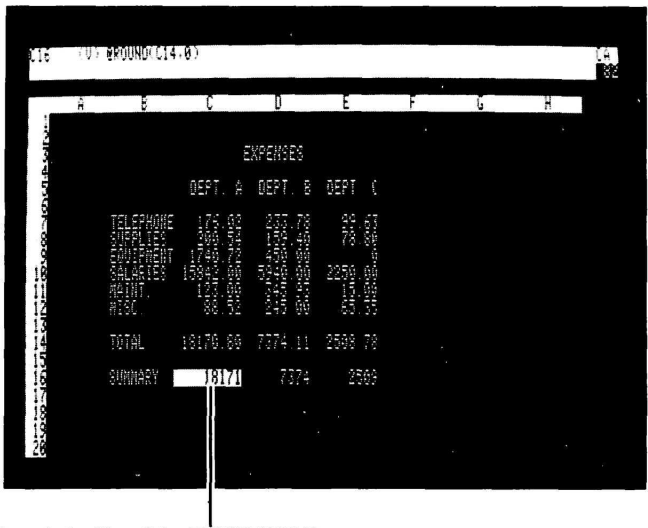
The number of decimal places must be a whole number, and can be any number from -60 to +60, inclusive. The program rounds values to eleven or twelve decimal places unless you use the Round function.

Sample entries are: @ROUND(B8,-2)
 @ROUND(B7*B9,1)
 @ROUND(@SUM(G3...G15,0)



Using the Special FlashCalc™ Functions

Example of use: You might use the Round function to round the dollar figures for a financial report. For example, in Figure 9-6, the dollar figures are overall expenses for a department. The totals for Columns C, D and E are rounded as shown in Row 16 for use in a report.



The formula in this cell is: @ROUND(C14,0)

Figure 9-6. The Round Function



SINE — @SIN(v)

The Sine function finds the sine of an angle.

The argument can be: cell reference
 number
 function
 formula

The argument must be a value in radians (2 pi radians equal 360 degrees; 2 radians equal 360/pi).

Sample entries are: @SIN(77)
 @SIN(C17)

Example: @SIN(C17) equals .9055784 when the
 value for C17 is 24.

SQUARE ROOT — @SQRT(v)

The Square Root function finds the square root for a given value.
The argument must be positive.

The argument can be: cell reference
 number
 function
 formula

Sample entries are: @SQRT(D26)
 @SQRT(A7*B22)

Example: @SQRT(B16) equals 20.54264 when B16
 is 422.



Using the Special FlashCalc™ Functions

SUM — @SUM(list)

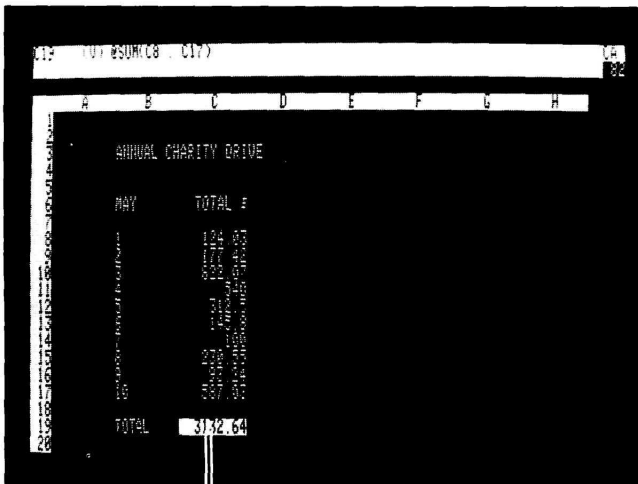
The Sum function adds a list of values.

The arguments can be:

- cell references
- numbers
- range(s)
- functions
- formulas

Sample entries are: @SUM(A1,A4,B2,C3)
@SUM(A1...A8)
@SUM(B3,B5...B10,@AVERAGE(C4...C11))

Example of use: Figure 9-7 shows an example of dollars collected for a charity drive. Column C contains the amounts collected for the first ten days in May. Cell C19 contains the total collected for that period.



The formula in this cell is: @SUM(C8...C17)

Figure 9-7. The SUM function



TANGENT — @TAN(v)

The Tangent function finds the tangent of an angle.

The argument can be:

- cell reference
- number
- range
- function
- formula

The argument must be a value in radians (2 pi radians equal 360 degrees; 2 radians equal $360/\pi$).

Sample entries are:

- @TAN(G3)
- @TAN(3.7819)

Example:

@TAN(G3) equals 1.483658 if G3 is 4.11932.

SPECIAL-PURPOSE FLASHCALC™ FUNCTIONS

The special-purpose FlashCalc functions allow you to choose values from a list, look up values in a table you create, use row or column numbers in formulas, or indicate which cells contain incorrect values.

@CHOOSE	Choosing a value from a list.
@COL	Using the column number in a cell.
@ERROR	Showing a cell containing an error.
@LOOKUP	Looking up a value in a table.
@NA	Showing that a value is not available.
@ROW	Using the row number in a cell.

CHOOSE — @CHOOSE(v,list)

The Choose function selects from a list based on the position indicated by the value of the first argument. For instance, if the first argument is 2, the Choose function selects the second value in the list.

The arguments can be:

- cell references
- numbers
- range(s)
- functions
- formulas

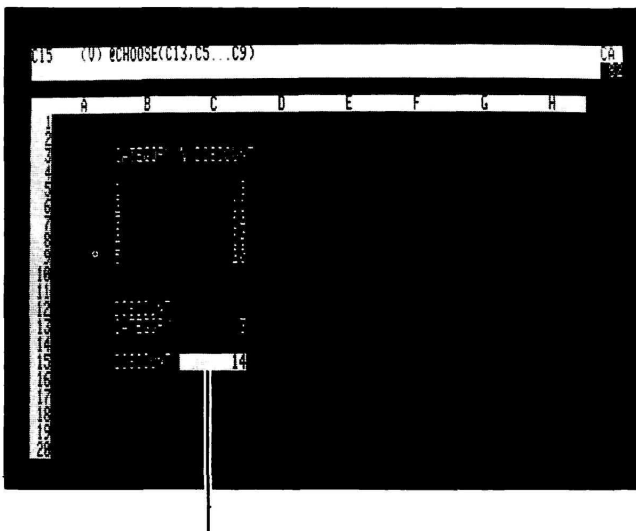
The value used in the first argument must evaluate to a whole number. The value cannot be a zero, or be larger than the number of entries in the list. These will cause NA to display in a cell. If the function selects a label or empty cell, the value of the function is zero.



Special-Purpose FlashCalc™ Functions

Sample entries are: **@CHOOSE(C4,C12...C18)**
 @CHOOSE(B7,B8...B12,B20...B25)

Example of use: You could find what discounts should be applied to certain items. Figure 9-8 lists categories of discounts with their discount percentages. You could enter the category number, and use the Choose function to find the discount which should be applied.



The formula in this cell is: **@CHOOSE(C13,C5...C9)**

Figure 9-8. The Choose Function



Using the Special FlashCalc™ Functions

COLUMN — @COL

The Column function places the number that corresponds to the position of the column into a cell. Column A equals 1, Column B equals 2, Column C equals 3, and so on.

The Column function requires no argument.

Example of use:

You might want to place a number in each column to identify locations of items. In Figure 9-9, each storage bin is identified with a number, starting with Column A. The @COL function is replicated into Columns B through H. This saves you the effort of typing each number.

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

The formula in this cell is: @COL

Figure 9-9. The Column Function



ERROR — @ERROR

The Error function displays the word ERROR in a cell when there is an error in that cell or when that cell refers to a cell containing an error. A common cause for an error is division by zero.

You can also use the Error function to cause the word ERROR to display if a certain error occurs.

The Error function requires no argument.

Note that the word ERROR will display in a cell when a formula or function cannot calculate a value for that cell. For example, if an invalid argument is entered into a function, the function cannot calculate a value; thus, the function displays the word ERROR in the cell.

Example of use:

You could use the Error function to display an error in a cell if an employee recorded too many hours worked for a certain period, as shown in Figure 9-10.



The formula in this cell is: @IF(C5 > 40,@ERROR,0)

Figure 9-10. The Error Function



LOOKUP — @LOOKUP(v,range)

Based on the value of the first argument, the Lookup function searches the range to find the largest value that is equal to or less than the value of the argument. It then selects the corresponding value from the adjacent list.

The values in the lists must be in the same row or column and must be in ascending sequence. Figure 9-11 shows both a horizontal and vertical table.

	A	B	C	D	E	F	G	H
1		10	20	30	40	50		
2								
3								
4								
5								
6								
7								
8								
9								
10		10						
11		20						
12		30						
13		40						
14		50						
15								
16								
17								
18								
19								
20								

Figure 9-11. Types of Tables Used by the Lookup Function

The arguments can be: cell references
numbers
range(s)
functions
formulas



Special-Purpose FlashCalc™ Functions

The value used in the first argument must evaluate to a whole number. The value must not be a zero or larger than the number of entries in the list.

Also make certain that the lists (ranges) do not contain labels. Labels will cause inaccurate results.

A sample entry is: `@LOOKUP(B8,C12...C18)`

Example of use: Salespersons qualify for bonuses if they have at least \$1200 in sales for a given period. Figure 9-12 shows that when the amount of sales is entered in cell B9, the Lookup function places the bonus to be given in cell B13.

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7		SALES		SALES		BONUS		
8		1449		1000		20		
9				2000		100		
10		BONUS		3000		150		
11				4000		200		
12								
13		20						
14								
15								
16								
17								
18								
19								
20								

The formula in this cell is: `@LOOKUP(B9,D9...D12)`

Figure 9-12. The Lookup Function



NOT AVAILABLE — @NA

The Not Available function is used to display NA in a cell if the value required does not exist, or in any cell which references that cell.

You can display NA in a cell you know does not contain a value. This cell will then not display ERROR.

The Not Available function requires no argument.

ROW — @ROW

The Row function places the row number into a cell. Row 1 equals 1, Row 2 equals 2, and so on.

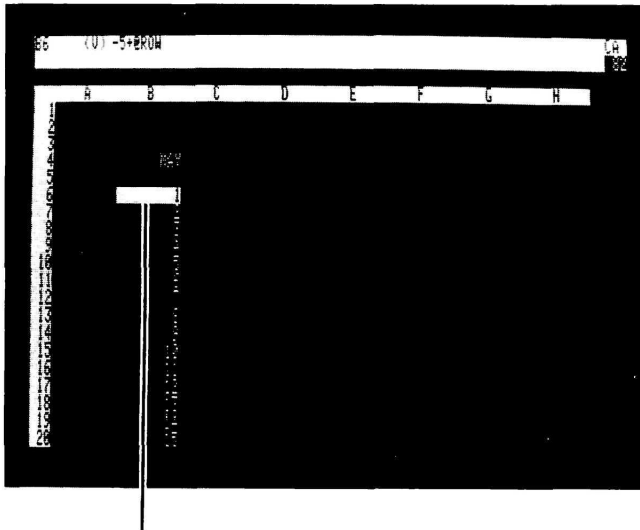
The Row function requires no argument.

Example of use:

You can quickly enter the calendar days of a month using the Row function in one cell and replicating that function into the remaining cells, as shown in Figure 9-13. Notice that the number -5 is used in the Row function to cause the numbering to start with 1 in Row 6.



Special-Purpose FlashCalc™ Functions



The formula in this cell is: $-5+@ROW$

Figure 9-13. The Row Function

FLASHCALC™ LOGIC FUNCTIONS

Logic functions help you to create formulas that allow you to make logical choices based on a certain set of conditions.

@AND	True if all comparisons are logically true.
@FALSE	Value is word FALSE if comparison is logically false.
@IF	Indicates that comparisons of values follow.
@ISERROR	True if value is logically an error.
@ISNA	True if value is not available.
@NOT	True if comparison is logically false; false if comparison is logically true.
@OR	True if any comparison is logically true.
@TRUE	Value is word TRUE if comparison is logically true.

EXAMPLES OF LOGICAL CHOICES

The following examples show you common uses for logic functions.

You might charge a customer a service charge if the total deposit in the account falls below a certain level. You could create a formula which would read:

If a customer's account balance is less than 800 dollars, then subtract a two-dollar service charge from the account balance.

The FlashCalc formula might look like:

@IF(B17 < 800, A8-2.00, A8)

Another common use for a logical formula might be to check to see if an employee qualifies for overtime pay. The formula would read:



If an employee has worked more than 40 hours or more than five days, then the rate of pay should be one and a half times the normal rate.

The FlashCalc formula might look like:

`@IF(@OR(B10>40,@COUNT(C3...C9)>5),B18*1.5,B18)`

This formula would be used along with other formulas to determine an employee's pay. You might frequently use several formulas to do a certain task, or use several functions together, as in this example.

HOW LOGICAL STATEMENTS ARE EVALUATED

Most formulas using the logic functions contain logical operators for comparing one value to another.

These logical operators are:

- | | |
|----|--|
| < | A value is less than another. |
| > | A value is greater than another. |
| = | A value is equal to another. |
| <= | A value is less than or equal to another. |
| >= | A value is greater than or equal to another. |
| <> | Two values are not equal. |

The logical formulas in the previous examples are logical statements. Logical statements are evaluated in the following way:

If(condition,first value,second value)

If the condition (a logical comparison) is true, then the first value is used. If the condition is not true, then the second value is used.

For example, in the statement `@IF(100>200,A1,A2)`, the value in cell A2 is used because 100 is not greater than 200.

You will often use the And, Not, and Or functions as part of a logical statement. When these are used in logical comparisons, it



Using the Special FlashCalc™ Functions

sometimes appears difficult to determine when the comparison is evaluated as true or false. The following table shows when these comparisons are true or false.

Table 9-1. The Logical Value of Comparisons

Function	Statement is	
	True If	False If
@AND	all comparisons are logically true	any comparison is not logically true
@NOT	the comparison is logically false	the comparison is logically true
@OR	any comparison is logically true	no comparison is logically true

A logical statement displays NA if any argument value is NA and is not an error.

A logical statement displays ERROR if it is logically incorrect. This means that, because of the way the logical statement is constructed, it cannot be logically evaluated.

AND — @AND(list of logical comparisons)

The And function is used as part of a logical comparison to insure that every compared value is true.

The values used in comparisons can be:

- cell references
- numbers
- functions
- formulas

Sample entries are:

- @AND(C2=4,C5>=C3)
- @IF(@AND(D3<D7,B6=B8),0,C12)



Example of use:

You need to assess a late charge of ten percent if the account is overdue and the account balance is more than ten dollars. Figure 9-14 shows the And function used to determine which accounts should be assessed a late charge.

The formula in this cell is: `@IF(@AND(D5 > C5, E5 > 10), .1 * E5, 0)`

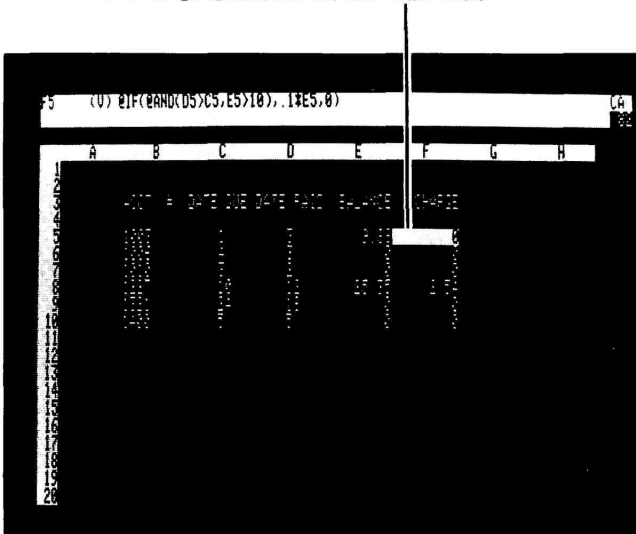


Figure 9-14. The And Function

FALSE — @FALSE

When you use the False function, the word FALSE displays in a cell.

The False function requires no argument.



Using the Special FlashCalc™ Functions

Example of use:

You could display the word FALSE beside the number of each account which does not qualify for a standard discount, as shown in Figure 9-15.

The formula in this cell is: @IF(C6 < 1500, @FALSE, @TRUE)

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6			1200	FALSE				
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Figure 9-15. The FALSE Function

IF — @IF(logical comparison,v1,v2)

The If function is the key element in most logical statements. It allows you to create a set of conditions which, when logically evaluated, return either a true or false value.

You can find a good example of how an If statement is evaluated at the beginning of this unit. The important thing to remember about an If statement is that, regardless of what type of logical comparison you use, the statement returns the first value (v1) if the comparison(s) is true and the second value (v2) if the comparison(s) is false.



The values used in
the If function can be: cell references
numbers
functions
formulas

Sample entries are: @IF(B4 < > B5,B2,0)
@IF(@AND(D3 < D7,B6 < > B9),0,C12)

Example of use: Several employees might enter items into
an inventory list. No item of inventory
has a value greater than \$200.00. You
could use the If function to display the
word ERROR in a cell so the employee
would know the entry is too large.
Figure 9-16 shows this If function.

The formula in this cell is: @IF(C6 > 200,@ERROR,0)





Using the Special FlashCalc™ Functions

IS ERROR — @ISERROR(v)

The Iserror function returns the logical value true if the argument evaluates to an error. You can use the Iserror function to prevent an erroneous value from being used in a calculation.

The values used in the If function can be:

- cell references
- numbers
- functions
- formulas

A sample entry is: **@IF(@ISERROR(G3),0,G3)**

Example of use: In computing taxes, a tax rate must be entered for every amount to be computed. If a tax rate is not entered, you can return a zero for that computation, showing that the computation cannot be correct, as shown in Figure 9-17.

The formula in this cell is: **@IF(@ISERROR(G7),0,F7*G7)**

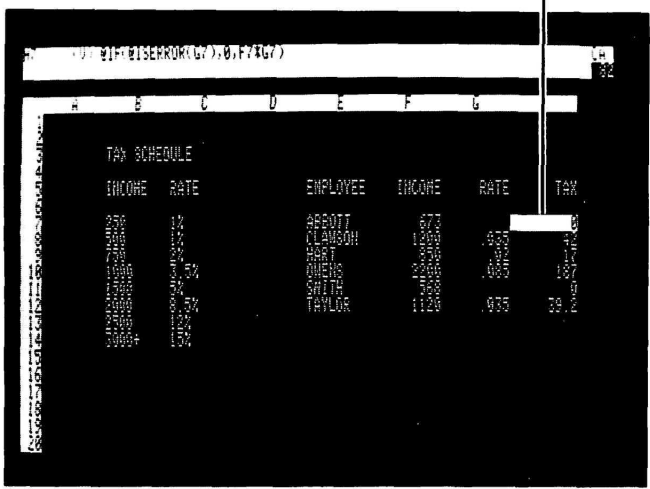


Figure 9-17. The Iserror Function



IS NOT AVAILABLE — @ISNA(v)

The Is Not Available function returns the logical value true if a value is not available for use in an argument. You may want to use this function to put a certain value in a cell if the needed value does not exist.

The argument can be: cell reference
 number
 function
 formula

A sample entry is: @IF(@ISNA(B7)0,B3)

Example of use: In filling out a summary report of inventory, you rely on detailed reports from other people. You do not always have all the information for the report. Rather than enter a guess of the current total for certain items, you enter @NA for that item, which returns an NA for the total on the report, as shown in Figure 9-18.



Using the Special FlashCalc™ Functions

DEPT.	A	B	C	D
ITEM				
ITEM 1	100	100	100	100
ITEM 2	100	100	100	100
ITEM 3	100	100	100	100
ITEM 4	100	100	100	100
ITEM 5	100	100	100	100
ITEM 6	100	100	100	100
ITEM 7	100	100	100	100
ITEM 8	100	100	100	100
ITEM 9	100	100	100	100
ITEM 10	100	100	100	100
ITEM 11	100	100	100	100
ITEM 12	100	100	100	100
ITEM 13	100	100	100	100
ITEM 14	100	100	100	100
ITEM 15	100	100	100	100
ITEM 16	100	100	100	100
ITEM 17	100	100	100	100
ITEM 18	100	100	100	100
ITEM 19	100	100	100	100
ITEM 20	100	100	100	100
TOTAL	NA	1161	625	NA

The formula in this cell is: @IF(@ISNA(@OR(C10...C15)),0,(@SUM(C10...C15)))

Figure 9-18. The Is Not Available Function

NOT — @NOT(logical comparison)

The value of the Not function is true if the logical comparison is false, and false if the logical comparison is true. This allows you to quickly create a logical comparison that can check to make sure that a value is not used if certain conditions are not met.

The values used in the
Not function can be:

- cell references
- numbers
- functions
- formulas

A sample entry is: @IF(@NOT(@OR(F10 > F5,D4 < D2)),0,C7)



Example of use:

To qualify for a certain loan, an applicant must not have an income over \$35,000, a net worth of more than \$150,000, or liabilities of more than \$20,000. Figure 9-19 shows the Not function to check for these conditions.

LOAN APPLICATION	CATEGORY 3	LOAN TABLE
NAME J. DOE	CATEGORY	AMT.
ADDRESS 106 BLVD		200
INCOME \$500		1000
NET WORTH 200000		1500
LIABILITY 1500		1500
LOAN AMT. 0		

The formula in this cell is:

`@IF(@NOT(@OR(C9>35000,C11>150000,C13>20000)),@LOOKUP(F3,G7...G11),`

Figure 9-19. The Not Function

OR — @OR(list of logical comparisons)

A logical comparison using the Or function is true if any two values being compared evaluate to true.

The values used in the Not function can be:

- cell references
- numbers
- functions
- formulas



Using the Special FlashCalc™ Functions

A sample entry is: `@IF(@OR(D12 < F5,D4 < D10),0,C7)`

Example of use: The example of the Not function (Figure 9-19) shows a common use of the Or function.

TRUE — @TRUE

When you use the True function, the word TRUE displays in a cell.

The True function requires no argument.

Example: You could display the word TRUE beside the amount of each home sold for more than \$100,000 dollars, as shown in Figure 9-20.

LOCATION	PRICE	
PARKER ST	120000	TRUE
OCEAN BLV	85500	
1ST ST	97300	
CAMBRIDGE	104200	TRUE
43RD AVE	98900	
MAIN ST	88000	
WALK AVE	147500	TRUE
LAKE BLVD	60000	

The formula in this cell is: `@IF(D8 > 100000,@TRUE,0)`

Figure 9-20. The True Function

FLASHCALC™ FINANCIAL FUNCTIONS

The financial functions help you make financial decisions. They most commonly are used to evaluate an investment. For example, what could a \$5000 investment be worth in the future? What rate of interest would you earn if the investment grew to a certain amount? If you paid out the money in installments, how long would it take or how much would each installment be?

This is the type of information the financial functions can give you.

The financial functions are:

@FV	Future Value of an Investment (even payments).
@IRR	Internal Rate of Return on an investment (even or uneven cash flows).
@NPV	Net Present Value of Future Investments (even or uneven cash flows).
@PERIODS	Number of Payment Periods.
@PMT	Payment Amount.
@PV	Present Value of a Future Amount (even payments).
@RATE	Interest Rate (or discount rate).

The arguments used in the financial functions are:

fv	Future value of an amount based on even payments. Must not be a range.
i	Interest rate for the period used in a function. Must be a decimal number, but not zero.
investment	Initial investment. Can be positive or negative number, but not zero. Usually a negative number.



Using the Special FlashCalc™ Functions

n	Number of payment periods. Must be a whole number greater than zero.
pmt	Amount of a payment.
pv	Present value of an amount based on even payments. Must not be a range.
range	Range of cash flows.

In most cases, you do not have to enter all the arguments in a financial function. The following table shows the required (R) and optional (O) arguments for each function.

Table 9-2. The Arguments Used in the Financial Functions

Function	Argument						
	i	n	pmt	pv	fv	investment	range
FV	R	R	O	O			
IRR						R	R
NPV	R						R
PERIODS	R		O	O	O		
PMT	R	R		O	O		
PV	R	R	O		O		
RATE		R	O	O	O		

THINGS TO REMEMBER AS YOU USE THE FINANCIAL FUNCTIONS

The following information will help you enter the financial functions correctly.

- You must enter the arguments in financial functions in the order shown in the description of each function.



- All arguments except for number of periods (n) can be positive or negative.
- In functions that contain optional arguments, you must enter values in at least three of the four arguments. Enter zero for any argument for which you do not enter a value.
- Label cells used as arguments will cause erroneous results.
- You enter payments and investments made as negative values. You enter interest earned and money borrowed as positive values.
- Interest (i) must be a decimal number and should coincide with the type of period. For example, you could enter the interest rate for a one-year period as either 12 percent or 1 percent, depending on whether the number of periods is one year or twelve months.

This unit does not attempt to teach you the principles behind financial calculations. It briefly describes each financial function. The formulas for the financial functions are in Appendix B, "Formulas Behind the Financial Functions."

If you want to learn more about using financial calculations, you might consult a finance or accounting textbook.

For simplicity, the sample entries for the functions in this section use actual numbers. Keep in mind, however, that those values would normally be references to cells on a worksheet.

FUTURE VALUE — @FV(i,n,pmt,pv)

You use the Future Value function to find the future value of an investment or series of payments.

The arguments are:

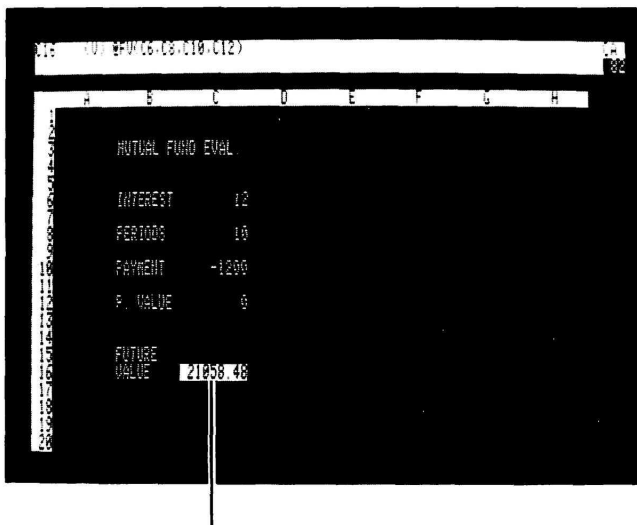
- i — interest
- n — number of payment periods
- pmt — payment amount
- pv — present value of investment



Using the Special FlashCalc™ Functions

Sample entries are: @FV(.12,12,-300,0)
 @FV(.10,240,0,2000)

Example of use: You are considering investing in a mutual fund. You want to know what amount your investment will grow to over a period of ten years if you invested \$1200 a year at 12% interest. Figure 9-21 shows the formula and the amount your investment of \$1200 a year would grow to.



The formula in this cell is: @FV(C6, C8, C10, C12)

Figure 9-21. The Future Value Function



INTERNAL RATE OF RETURN — **@IRR(investment,range)**

You use the Internal Rate of Return function to evaluate whether to make an internal investment, such as purchasing a new piece of equipment. This helps you compare this return against the amount you might earn on an external investment such as loaning money or buying a bond.

If the IRR function displays ERROR, either the arguments are entered incorrectly or the function cannot calculate a result.

The arguments are: investment (usually a negative amount)
 range of uneven cash flows

A sample entry is: **@IRR(-20000,A5...A15)**

Example of use: Your business produces a large number of items that must be assembled by hand. You know approximately how many more items you could produce by using an automatic assembler. Figure 9-22 shows the probable return on this investment.

The negative amounts include costs such as routine maintenance. The positive amounts are the increased amounts earned as a result of higher productivity.



Using the Special FlashCalc™ Functions

The formula in this cell is: @IRR(-20000,D20...E20)

	PURCHASE	ENGL	IRR
MONTH	PAYMENTS	RISC	INCOME
1	-20000	-1000	25000
2	-1000	-1000	25000
3	-1000	-1000	25000
4	-1000	-1000	25000
5	-1000	-1000	25000
6	-1000	-1000	25000
7	-1000	-1000	25000
8	-1000	-1000	25000
9	-1000	-1000	25000
10	-1000	-1000	25000
11	-1000	-1000	25000
12	-1000	-1000	25000
13	-1000	-1000	25000
14	-1000	-1000	25000
15	-1000	-1000	25000
16	-1000	-1000	25000
17	-1000	-1000	25000
18	-1000	-1000	25000
19	-1000	-1000	25000
20	-1000	-1000	25000
TOTAL	-20000	-1000	25000

Figure 9-22. The Internal Rate of Return Function

NET PRESENT VALUE — @NPV(i,range)

You use the Net Present Value function to determine the current value of a range of future uneven cash flows. This function is particularly useful if you have variable costs and income for an investment. The result of the NPV function minus your initial investment is the net present value of that investment.

If the net present value for the investment is a negative amount, it may not be a desirable investment.



FlashCalc™ Financial Functions

The arguments are: **i**—interest
 range of uneven cash flows

A sample entry is: **@NPV(.9,B2..B12)**

Example of use: You are considering buying a piece of income producing property. Based on past records, you know that the income varies from period to period, even though your payments will always be the same amount. Figure 9-23 shows you how you might evaluate this investment with a Net Present Value function.

The screenshot shows a spreadsheet window with the title bar "PROPERTY EVAL. - PROF. A". The formula bar at the top displays the formula `=NPV(.18,C20..D20)`. The spreadsheet has columns labeled A through G. Column A contains month abbreviations from JAN to DEC, followed by a TOTAL row. Column B is labeled "EXPENSES" and contains negative values. Column C is labeled "INCOME" and contains positive values. Column D is labeled "NET PV" and contains the calculated net present value for each month and the total. The total net present value is 17453.47.

MONTH	EXPENSES	INCOME	NET PV
JAN	-1000.00	2000.00	17453.47
FEB	-1000.00	2000.00	
MAR	-1000.00	2000.00	
APR	-1000.00	2000.00	
MAY	-1000.00	2000.00	
JUNE	-1000.00	2000.00	
JULY	-1000.00	2000.00	
AUG	-1000.00	2000.00	
SEP	-1000.00	2000.00	
OCT	-1000.00	2000.00	
NOV	-1000.00	2000.00	
DEC	-1000.00	2000.00	
TOTAL	-10000.00	20000.00	

The formula in this cell is: **@NPV(.18,C20...D20)**

Figure 9-23. The Net Present Value Function



Using the Special FlashCalc™ Functions

NUMBER OF PERIODS — @PERIODS(i,pmt,pv,fv)

You use the Number of Periods function to find out how long it will take to achieve a financial goal, such as saving for retirement or paying off a home loan.

The arguments are:

- i — interest
- pmt — payment amount
- pv — present value of investment
- fv — future value of investment

Sample entries are: @PERIODS(.18, -200,5000,0)

Example of use: You are borrowing \$10,000 to make home improvements. You would like to know how long it would take you to pay off the 15 percent loan if you pay \$200 a month. Figure 9-24 shows you the Periods function that would give you the answer.



The formula in this cell is: @ROUND(@PERIODS(C6, C8, C10, C12),0)

Figure 9-24. The Number of Periods Function



PAYMENT AMOUNT — @PMT(i,n,pv,fv)

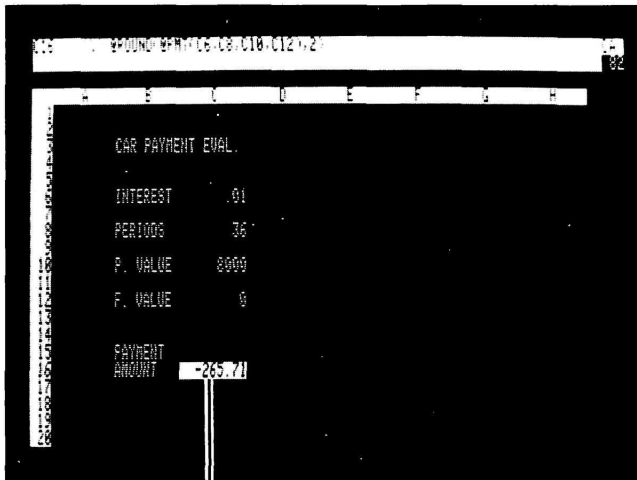
You use the Payment function to find out how much your payment will have to be to achieve a financial goal within a certain period of time at a given interest rate.

The arguments are:

- i — interest
- n — number of payment periods
- pv — present value of investment
- fv — future value of investment

Sample entries are: @PMT(.14,48,5000,0)

Example of use: You are borrowing \$8000 to buy a car. The loan is for thirty-six months at twelve percent interest. Figure 9-25 shows the Payment function that calculates your car payment.



The formula in this cell is: @ROUND(@PMT(C6, C8, C10, C12),2)

Figure 9-25. The Payment Function



Using the Special FlashCalc™ Functions

PRESENT VALUE — @PV(i,n,pmt,fv)

You use the Present Value function to find out how large an investment you would have to make now in order to have a certain amount at a future time.

The arguments are:

- i — interest
- n — number of payment periods
- pmt — payment amount
- fv — future value of investment

Sample entries are: @PV(.12,240,-200,0)

Example of use: You would like to buy property that would be worth \$300,000 in twenty years. Figure 9-26 shows you what that property would cost you today if you borrowed the money at a twelve percent interest rate.



The formula in this cell is: @PV(C6, C8, C10, C12)

Figure 9-26. The Present Value Function



INTEREST RATE — @RATE(n,pmt,pv,fv)

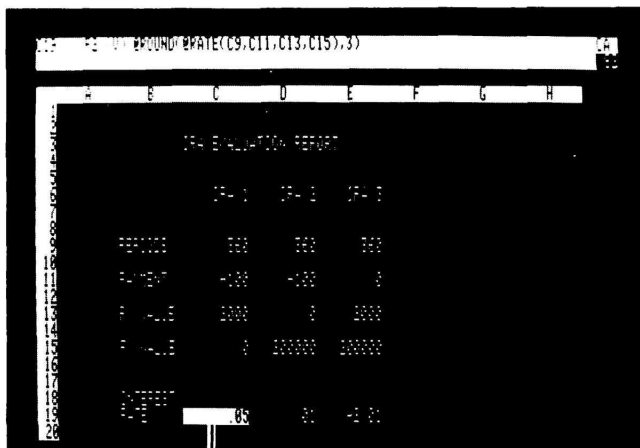
You use the Interest Rate to find the interest rate for a given investment.

The arguments are:

- n — number of payment periods
- pmt — payment amount
- pvt — present value of investment
- fv — future value of investment

Sample entries are: @RATE(120, -300, 30000, 0)

Example of use: You are evaluating various IRA's to determine which one pays the highest interest. Figure 9-27 shows the rate for three different IRA's.



The formula in this cell is: @ROUND(@RATE(C9, C11, C13, C15), 3)

Figure 9-27. The Interest Rate Function



Appendixes

Appendixes

Appendix A: Converting Worksheets from Other Programs	A-4
Notes on Converting Worksheets	A-4
ProDOS Conversion	A-4
Loading Converted Worksheets	A-4
Checking the Results	A-4
Where Can You Get Additional Worksheets?	A-5
Appendix B: Formulas behind the Financial Functions	B-1
Future Value	B-1
Internal Rate of Return	B-2
Net Present Value	B-2
Number of Periods	B-2
Payment Amount	B-2
Present Value	B-3
Rate	B-3
Appendix C: Error Messages	C-1
Appendix D: Tailoring the Program to Your Computer	D-1
Do You Need to Tailor the Program?	D-2
Overview of the Hardware Menu	D-3
Introducing the List of Options	D-4
Introducing the Hardware Commands	D-4
Filling out the List of Options	D-5
Moving the Cursor	D-5
The Prefix Option	D-6
Indicating Video Display Case	D-6
Indicating Keyboard Typing Case	D-7
Specifying the One-Wire Shift Key	D-8
Indicating the Printer Slot Number	D-9
Indicating the Video Slot Number	D-10
Loading a Video Driver	D-11
Saving the Configuration File	D-13
Reloading the Program	D-15

If You Have an Apple II Plus	D-17
Using the Space Bar	D-17
Using CTRL Key Combinations	D-18
Tabbing Forward and Backward	D-18
Moving the Cursor in the Menus	D-19
Using the REPT Key	D-19
Printing Lowercase Characters	D-20
Typing Special Characters with the One-Wire Shift Key Modification	D-21
Appendix E: Using a Profile™ Hard Disk	E-1
Installing the Program on Your ProFile™ Hard Disk Drive	E-1
Loading the Program from the Profile™ Hard Disk Drive	E-4

CONVERTING WORKSHEETS FROM OTHER PROGRAMS

There are many worksheet products available today, most of which share not only similar functions, but use similar methods of storing their worksheets. Because of this, you may be able to use worksheets that were created or designed for other worksheet programs with your FlashCalc™ program.

NOTES ON CONVERTING WORKSHEETS

The basic consideration in converting worksheets is to save yourself time and effort. If you, or someone else, have already done the work on one worksheet, it is not always necessary to start over again with the FlashCalc program.

ProDOS Conversion

The first question you need to answer when converting worksheets is "Was this worksheet created using Apple ProDOS?" If it was not, you will have to use the DOS-ProDOS conversion program. This program is on your ProDos User's Disk, and is called CONVERT. Instructions for using the CONVERT program are detailed in the *ProDOS User's Manual* that came with your copy of ProDOS. Follow these instructions to convert your DOS worksheet files to ProDOS.

Loading Converted Worksheets

Load a converted worksheet in the same way that you load a standard worksheet. Don't worry about hurting your computer or the FlashCalc program, this cannot happen as long as you follow the instructions described in Chapter 7.

Checking the Results

Once you have loaded the worksheet, you should review the results. Use the arrow keys to move through cells to make sure



that nothing has changed. It is a good idea to have a printed copy of the original worksheet to check these results. In particular, pay attention to:

- Blank cells that previously contained formulas. This indicates that some formula or function used by the previous worksheet is handled in a different manner by the FlashCalc program. These formulas will have to be rewritten using FlashCalc formulas and functions.
- Values that have changed. These may be changes caused by attribute or formats that will not convert, or a difference in the way a function is handled by the two programs. These values or formulas will need to be edited or rewritten.
- Gibberish replacing a label. This cell may have had an attribute or similar function formatting the display of the label. These are usually as easy to fix as they are to spot.

In general, review the worksheet and look into anything that looks different.

WHERE CAN YOU GET ADDITIONAL WORKSHEETS?

Worksheets can be found in two forms, either listed on paper or stored on disk. Listed worksheets must be typed into the FlashCalc program, just as if you were creating them for the first time. Worksheets that have been stored on disk may have to be converted to ProDOS format before they can be loaded into the FlashCalc program.

The following is a checklist of possible sources for worksheets.

Listed Worksheets:

- Books
A trip to almost any bookstore's computer section will present you with several published books of worksheets. Even if these are not written expressly for the FlashCalc



Appendixes

program, you may find that they suggest applications for worksheets that you have not yet even dreamed of.

- **Magazines**

Many magazines regularly publish worksheets in their pages. These are usually described in an accompanying article. Because of this additional description, converting these worksheets is usually quite simple.

Worksheets already on disk:

- **Products for sale**

Many worksheets are available for sale; check with your dealer for details. If you are considering purchasing such a product, explain to the dealer what you are trying to do, and make sure that he understands your needs. If possible, try to convert the worksheet **before** you actually purchase it.

- **User's Groups**

A User's Group is a collection of computer users who meet to discuss their equipment and software. Often a User's Group will have a library of software that is in the "Public Domain," and available at no or small cost to all members. It is also common for these libraries to contain worksheets.

APPENDIX B

FORMULAS BEHIND THE FINANCIAL FUNCTIONS

This Appendix lists the formulas used for calculating financial functions. The financial calculations for the Future Value, Payment, and Present Value functions are based on end of period payments; you can easily convert to beginning of period payments by multiplying the calculation result by $1+i$.

Variables used in these formulas are:

c	Initial investment.
cf	Cash flow.
fv	Future value.
i	Interest rate.
ln	Natural logarithm.
n	Number of periods.
pmt	Payment amount.
pv	Present value.
u	Fractional portion of n.
v	Fractional portion of n.

FUTURE VALUE

If $i < > 0$:

$$fv = \frac{pmt(1 - (i + 1)^v)}{i} - pv (i + 1)^n$$

If $i = 0$:

$$fv = -pv - n * pmt$$



Appendixes

INTERNAL RATE OF RETURN

An iterative method is used to solve the IRR for i . Initial value (0) equals amount of investment.

cf_1 equals first cash flow; cf_n equals last cash flow.

$$0 = \frac{cf_1}{(1+i)^1} + \frac{cf_2}{(1+i)^2} + \frac{cf_3}{(1+i)^3} + \dots + \frac{cf_n}{(1+i)^n} + c$$

NET PRESENT VALUE

cf_1 equals first cash flow; cf_n equals last cash flow.

$$npv = \frac{cf_1}{(1+i)^1} + \frac{cf_2}{(1+i)^2} + \frac{cf_3}{(1+i)^3} + \dots + \frac{cf_n}{(1+i)^n}$$

NUMBER OF PERIODS

$$n = \frac{\frac{pmt - fv \cdot i}{pmt + pv \cdot i}}{\ln(i+1)}$$

PAYMENT AMOUNT

If $i < > 0$:

$$pmt = \frac{fv \cdot i}{1 - (i+1)^v} + \frac{pv \cdot i(i+1)^n}{1 - (i+1)^v}$$

If $i = 0$:

$$pmt = \frac{-fv}{n} - \frac{pv}{n}$$



PRESENT VALUE

If $i < > 0$:

$$pv = \frac{pmt}{i} \left[(i+1)^{-n} - (i+1)^{-u} \right] - \frac{fv}{(i+1)^n}$$

If $i = 0$:

$$pv = n * pmt - fv$$

RATE

If $pmt < > 0$:

$$0 = pv(i+1)^u + pmt \left(\frac{1 - (i+1)^{-v}}{i} \right) + fv(i+1)^{-v}$$

An iterative method is used to solve RATE for i .

If $pmt = 0$:

$$i = - \left(\frac{fv}{pv} \right)^{1/n} - 1$$



ERROR MESSAGES

This appendix lists all of the error numbers that can appear when you are using the FlashCalc™ program and explains how you can fix the problem or eliminate the error. Error messages, when incurred, display on the screen by themselves, and if they are file related, a file name is provided so you know where the problem occurred.

Below is an example of a message that appears on the screen:

System error number 4 Disk write protected

The list below includes the number of the message in the first column, the file name in the second column, if a name is provided with the message, and the phrase that appears on the screen to describe the problem in the third column.

An explanation of the problem and what you can do to fix the problem follows each message.

Message Number	File Name Provided	Reason
0	No	S/W error There is some problem with your program. Contact VisiCorp Technical Support. (S/W stands for software.)
1	No	Out of memory (during disk load or while calculating your worksheet) You have run out of room in your computer to load the file or to complete the calculations for your worksheet. You may need to create two or more smaller worksheets, rather than one large sheet. If you were trying to load a file that is too large, check to be sure you have the correct data disk. You may have changed computers and now are using one with less memory than the one you used to create the current worksheet. You may need to see your dealer about getting more memory added to your system.



Appendixes

Message Number	File Name Provided	Reason
2	No	<p>Not a DIF file</p> <p>You are trying to load a file as a DIF file; however, the format of the file is not DIF. Be sure you have the correct data disk inserted and that you have typed the file name correctly. Verify that you are in the correct directory.</p>
3	Yes	<p>Sudden end of data (during Load)</p> <p>You are loading a worksheet that was saved on more than one data disk, because it was too large for one disk. You have just reached the end of one of the data disks. The name of the continuation file (where the remainder of the worksheet was saved) is on the screen with the message. Insert the correct data disk and continue loading the worksheet (see Chapter 7, Unit 3 for further information).</p>
4	No	<p>Disk write protected</p> <p>There is a write-protect tab on your disk. Be sure you are using the correct data disk. If necessary, remove the write-protect tab and try the procedure again. Refer to the <i>Getting Started Guide</i> for information on write-protect tabs.</p>
5	Yes	<p>File is locked (during save)</p> <p>You have protected a file from changes by "locking the file." If you really want to save a current file to this same name, you must go back to the Storage menu and unlock the file (refer to Chapter 7, Unit 5).</p>
6	Yes	<p>File not found</p> <p>The program cannot find a file by the name you have entered. Be sure you typed the name correctly and that you have the prefix set to the directory containing the file.</p>



Error Messages

Message Number	File Name Provided	Reason
7	Yes	Wrong file type The operation just attempted is not possible for the name entered. Be sure you have typed the file name correctly. DIF or FlashCalc worksheets are TXT files. If necessary, use the Catalog command (/SUC) to check the file type. Also, check to be sure the prefix correctly names a directory or disk, not a data or program file.
8	No	Disk I/O error The program is trying to read a disk or write to disk, but some problem is preventing the action. Be sure the disk is inserted in the drive, that the disk is formatted, and that the disk drive door is closed. If you are using a hard disk, be sure it is turned on. If all else fails, try a new disk.
9	Yes	Disk is full There is not enough room on the disk to save the file. You can either use another data disk, or delete other files to make room for this file.

Below are some messages you may receive during certain processes of the program.

When establishing the page layout for printing a worksheet (/P, Layout option), the FlashCalc program checks to be sure the specifications you enter fall within reasonable and accurate limits. If errors are detected, one of the following messages will display.

top + text > paper

The page length (number of lines) must be greater than or equal to the top margin plus the text length. When this message displays, you have set a page length that is shorter (in lines) than the top margin plus the number of lines of text you have specified. Adjust the top margin or the number of lines so the total of the two is



Appendixes

less than or equal to the page length. Refer to Figure 8-6 (Chapter 8, Unit 3) for an illustration of page layout for printing.

`left + text > page`

The paper width (number of characters) must be greater than or equal to the left margin plus the text width. When this message displays, you have set a paper width that is less than (fewer characters) the left margin plus the text width. Adjust the left margin or the text width so the total of the two is less than or equal to the page width. (See Figure 8-6 for an illustration of page layout for printing.)

When creating, modifying, and calculating a worksheet there are several messages that may display. These are explained below.

`column width is 0`

The cursor is currently located at a cell in a column that cannot be seen because the column width is zero. You can reset the column width if you wish to display the cell contents in that column. You can make changes to the cells in that column without increasing the column width. (Use the Goto command to move to a cell in that column.)

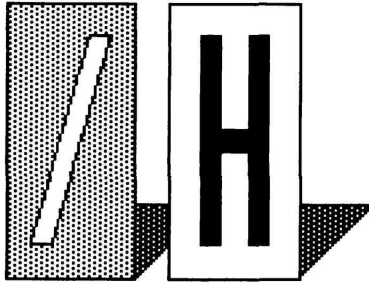
`column is too wide to show`

The column cannot all fit on the screen. This does not affect value or label cell entries. If you set the column width to a smaller size (/GCC), the entries will be displayed.

`cell attributes conflict with command`

You are trying to make changes in a cell that is protected from changes by a previous command, such as /AP (protect) or that is limited to certain types of entries, such as /AV (values only). If you want to proceed with the change, you must reset the cell attribute.

TAILORING THE PROGRAM TO YOUR COMPUTER



HARDWARE

- O Move to options list.
Set options:
Prefix—Directory to contain file.
Video case—Whether computer can display lowercase.
Keyboard case—Whether computer can type lowercase.
One wire shift—Whether Apple II Plus has this wire.
Printer slot—Number of slot containing printer card.
Video slot—Number of slot containing video card.
Video driver—Whether video card needs a driver.
- S Save configuration file.
- L Load configuration file that contains option settings.
- C Return to worksheet.



Appendixes

This appendix describes how to make the FlashCalc program take advantage of all of the equipment you have in your computer. Before you can use this section, you must know what kind of equipment you have.

Refer to the questions you answered at the beginning of the *Getting Started Guide* under "Your Equipment" to determine which procedures to follow in this section.

DO YOU NEED TO TAILOR THE PROGRAM?

If you have an Apple //e, you need to read this section if either of the following is true:

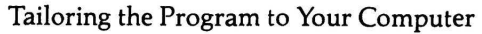
- You have an 80-column video card, but it is **not** the *Apple //e 80-Column Text Card*.
- You have a printer connected to your computer, but its interface card is **not** in slot 1.

In other words, the program is already tailored for you if you have the *Apple //e 80-Column Text Card* (or if you have no 80-column video card), and if your printer's interface card is in slot 1 (or if you have no printer). If both of those considerations are true, you do not need to read any further in this chapter.

If you have an Apple II Plus, you need to read this section if any of the following is true:

- You have an 80-column video card.
- You have the one-wire shift key modification, or any other equipment that lets you type lowercase letters.
- Your printer's interface card is installed in a slot other than slot 1.

In other words, if you have a standard Apple II Plus, without any modifications, and if your printer's interface card is attached in



OVERVIEW OF THE HARDWARE MENU

Your screen should look like Figure D-1.





INTRODUCING THE LIST OF OPTIONS

The list of items displayed inside the dotted lines are the options that tell the computer what equipment you have. The highlighted items show the current settings for the equipment that the program assumes that you have. You can change these option settings to match what you have.

After you complete the list of options, you save the information on either your program disk or a data disk. Then, the next time you load the program, it will be automatically set up for your equipment.

Note:

Before the information can be saved on a data disk, the disk must be initialized (or formatted). The initialization process prepares a disk for receiving data. You initialize a disk in the *QuickStart Course*.

INTRODUCING THE HARDWARE COMMANDS

The top line of the screen is the same as the worksheet screen. The second line tells you how to use the Hardware menu. The third line is what we are concerned with now; it contains the menu commands. The commands are easier to understand if they are described in right to left order:

- The Save command creates a file from your current responses to the Hardware options and saves them on a disk. The file on which they are saved is called the *configuration file*.
- The Load command copies the configuration file from a disk that you previously saved it on. The new information is displayed and used by the program to operate with your equipment.




- The Options command moves the cursor to the lower part of the screen so that you can fill in the list of options.
- The Calc command returns you to the worksheet screen with the options you filled out in effect.





Enough about how the Hardware menu works. Now you need to use it.




FILLING OUT THE LIST OF OPTIONS

To fill out the list of options, you need to know what the cursor is and how to move it.





Notice that the Calc command (on the third line from the top of the screen) is displayed inside a highlighted box. Now press the  key once. The highlighted box moves to the Options command. This box is called the cursor.

Moving the Cursor

The cursor moves around the screen when you press one of the arrow keys (, , , or ).

Press  several more times. The cursor moves across the command line. When it reaches the last command on the right, it moves to the leftmost command the next time you press . Try pressing . The cursor moves left.

Move the cursor with the arrow keys until it rests on the Options command. Press **RETURN**. The cursor moves down to the first option, Prefix.

Press the  key repeatedly (or the  key if you have an Apple II Plus) to move the cursor down the list of options. Pressing  (or ) moves the cursor up the list.



Appendixes

Each of the sections that follow describes one of the options in the list. The text tells you:

- Whether you need to use the option at all.
- How to fill out the option.

When you are finished filling out the options, "Saving the Configuration File" explains how to record your new hardware options on disk.

The Prefix Option

Ignore this option for now. You would change the prefix only if you want to save an alternate version of the configuration file on another disk. The prefix should have one of the following displayed at the right:

- /FLASHCALC/ if you have only floppy disk drives.
- /PROFILE/FLASHCALC/ if you installed the program on its own directory on the ProFile.
- /PROFILE/ if you installed the program on the main directory of the ProFile.

If you already changed the prefix, change it back.

Indicating Video Display Case

Note:

If your Apple //e has the Apple //e 80-Column Text Card (or no 80-column card), SKIP to "Indicating the Printer Slot Number."

If your Apple II Plus has no 80-Column video card, SKIP to "Indicating Keyboard Typing Case."



Tailoring the Program to Your Computer

The Video Case option indicates whether lowercase letters will be displayed on your screen. The option has only two settings: UPPER (Uppercase only), or UPPER/LOWER (Uppercase and Lowercase combined). The option is initially set to UPPER (UPPER is highlighted).

If you have an 80-column video card that allows you to display lowercase letters, you need to set the option to UPPER/LOWER. To change the setting:

Step 1. Use the arrow keys to move the cursor to the Video Case option.

Step 2. Press **RETURN**. The highlighting moves to UPPER/LOWER. Don't worry if some of the characters on the screen turn to nonsense characters at this point. You can still use all of the options in the menu. The characters will be displayed correctly when you save the configuration and return to the worksheet.

Note:

If you changed the Video Case option to UPPER/LOWER, but you **do not** have an 80-column card installed in your computer, nonsense characters appear on the screen. If this happens, change the Video case option setting back to UPPER. The nonsense characters will all disappear as you move the cursor down the lines of the screen.

Indicating Keyboard Typing Case

Note:

If you have an Apple //e, SKIP to "Indicating the Printer Slot Number."



Appendixes

The Keyboard Case option indicates whether you can type uppercase and lowercase letters from your keyboard. The option has only two settings: UPPER (Uppercase only), or UPPER/LOWER (Uppercase and Lowercase combined). The option is initially set to UPPER (UPPER is highlighted).

If you have equipment in your Apple II Plus that lets you type lowercase letters, you need to set the option to UPPER/LOWER. This may be the one-wire Shift key modification, or some other equipment. To change the setting:

Step 1. Use the arrow keys to move the cursor to the Keyboard Case option.

Step 2. Press **(RETURN)**. The highlighting moves to UPPER/LOWER.

Specifying the One-Wire Shift Key

Note:

If you have an Apple //e computer, SKIP to "Indicating the Printer Slot Number."

If your Apple II Plus doesn't have the one-wire shift key modification, skip to "Indicating the Printer Slot Number."

If you have the one-wire SHIFT key modification, you need to set the One Wire Shift option to Yes. The initial setting is No. To change the setting:

Step 1. Use the arrow keys to move the cursor to the One Wire Shift option.

Step 2. Press **(RETURN)**. The highlighting moves to Yes.



Tailoring the Program to Your Computer

Note:

If you do not have the Shift key modification and would like to have it done, contact your computer dealer to have it installed.

Indicating the Printer Slot Number

Note:

If you do not have a printer connected to your computer, or if your printer interface card is placed in slot 1, SKIP to "Indicating the Video Slot Number."

Before you can print worksheets, you need to tell the program what slot your printer interface card is in. The Printer Slot option is initially set to slot 1. To change the setting:

Step 1. Use the arrow keys to move the cursor to the Printer Slot option.

Step 2. Press **(RETURN)**.

Step 3. Type the number of the slot that contains your printer interface card (the minimum and maximum numbers you can type are displayed at the top of the screen).

WARNING:

MAKE SURE YOU SPECIFY THE CORRECT SLOT NUMBER.
IF YOU SPECIFY AN INCORRECT SLOT, YOU MAY
DAMAGE YOUR PROGRAM DISK.

Step 4. Press **(RETURN)**.



Appendixes

Indicating the Video Slot Number

Note:

If your Apple //e has the Apple //e 80-Column Text Card (or no 80-column card), SKIP to "Saving the Configuration File."

If your Apple II Plus does not have an 80-column video card, SKIP to "Saving the Configuration File."

To display 80-columns on the screen, you need to tell the program which slot contains the 80-column video card. The Video Slot option is initially set to 0. To change the setting:

Step 1. Use the arrow keys to move the cursor to the Video Slot option.

Step 2. Press **(RETURN)**.

Step 3. Type the number of the slot that contains your video card (the minimum and maximum numbers you can type are displayed at the top of the screen).

WARNING:

IF YOU SPECIFY AN INCORRECT SLOT, YOU MAY HAVE TO RELOAD THE PROGRAM. MAKE SURE THAT YOU TYPE THE CORRECT SLOT NUMBER.

Step 4. Press **(RETURN)**.



Loading a Video Driver

Note:

Read this section if you have one of the following video cards. Otherwise, SKIP this option and go on to "Saving the Configuration File."

- Micromax Fullview 80-Column Card
 - STB 80-Column Card
 - Videx UltraTerm 80-Column Card
 - Videx Videoterm 80-Column Card (with the ASCII Inverse EPROM)
 - Vista Vision 80-Column Card
 - BPI Wizard 80-Column Card
-

A few brands of 80-column cards need a video driver to run with the program (most cards don't). The ALS Smarterterm card is an example of an 80-column card that doesn't need a driver. A driver is a separate program that enables the FlashCalc program to use a particular video card.

If you are using one of the cards listed above, you need to use the Video Driver option. If specifying the video slot number and returning to the worksheet doesn't cause 80-columns to display with your 80-column card, try specifying the drivers described in this section to see if one of them works.

To select a driver:

Step 1. Use the arrow keys to move the cursor to the Video Driver option.

Step 2. Press **(RETURN)**. The highlighting moves to Yes.



Appendixes

Step 3. Type **C** to select the Calc command. A message appears at the top of the screen telling you to enter a prefix, or press **(ESC)** or **(RETURN)**. This message is instructing you to insert the FlashCalc program disk and indicate its location to the program.

Step 4. Insert the FlashCalc program disk in one of the drives if it is not there already.

Step 5. If the Prefix option already shows **/FLASHCALC/**, press **(RETURN)**. If it does not, type **/FLASHCALC**, then press **(RETURN)**.

The screen looks like Figure D-2.

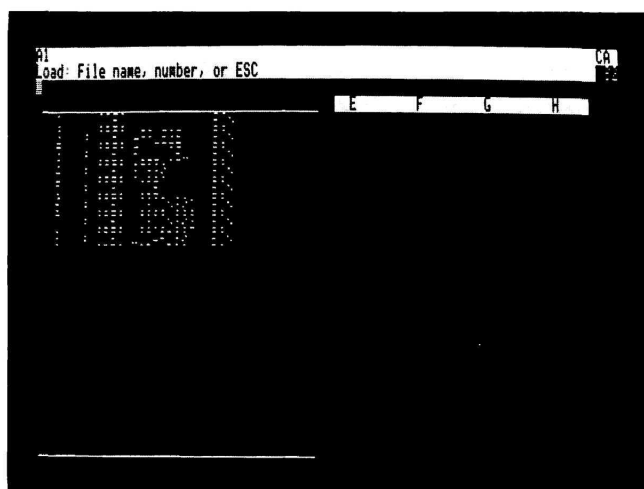


Figure D-2. The Video Driver List

The numbered items on the screen are all video drivers. Number 1 is the placeholder for whichever driver is the current video driver. The video driver you are about to select will later be saved as



Tailoring the Program to Your Computer

number 1. Number 2 is the driver for the Apple //e 80-Column Text Card. The remaining drivers correspond to particular brands of 80-column video cards.

There are two drivers to choose from for Vista Vision 80 cards. Use VIDEO.VISION801 if you are running your computer in the United States. Use VIDEO.VISION802 if you are running your computer outside of the United States where 50-cycle power is used.

Step 6. Type the number of the driver you think best fits your equipment.

Step 7. Press **(RETURN)**. The screen displays the worksheet again. If the display is not correct, you loaded a video driver that will not work with your equipment. If this happens, reload the FlashCalc program, and experiment with the other video drivers until you find one that works.

SAVING THE CONFIGURATION FILE

Note:

If you have an Apple II Plus and made no changes to the Hardware options, SKIP to "If You Have an Apple II Plus."

After you have filled out the list of Hardware options, type **C** to select the Calc command. Look at the worksheet screen and check that it displays as you specified it would. If you specified the location of your 80-column card, the screen should show columns A through H. If you specified upper/lower video and keyboard case, you should be able to type uppercase and lowercase letters. If you have problems, go back to the Hardware menu (by typing **/H**) and check your responses to the list of options.

When you first display 80-columns on the screen, you may need to adjust your monitor's brightness and contrast.



Appendixes

If you are having trouble displaying 80-columns with your 80-column video card, your card may need a video driver. Refer back to "Loading a Video Driver" for instructions.

If the screen is displayed correctly, you should save the configuration file on the FlashCalc program disk. (If you installed the program on the ProFile, begin with Step 2.) To save the configuration:

Step 1. Remove the FlashCalc program disk from the drive, and remove the write-protect tab. Then, insert the FlashCalc program disk back into the drive.

Step 2. Type **/H**. The screen displays the Hardware menu.

Step 3. Make sure the prefix is still **/FLASHCALC/** if you are running the program from a floppy drive, or that it shows the pathname of the directory onto which you installed the program on the ProFile disk.

Step 4. Type **S** to select the Save command. Instructions appear at the top of the screen.

The configuration/driver disk is where you want to save the configuration file. If you installed the program on the ProFile, you don't need to insert a disk; you want to save the configuration file in the same directory that contains the program.

If you are running the program from a floppy drive, use the FlashCalc program disk as the configuration/driver disk to save your first configuration file. Later, you may want to save an alternate configuration file on a data disk.

Step 5. Press **(RETURN)** to save the configuration file on the disk. (You can also press **(ESC)** at this point if you want to cancel this save operation.)

The disk drive spins for a few seconds. Then the screen displays the Hardware menu.



Tailoring the Program to Your Computer

Step 6. Type **C** to select the Calc command to return to the worksheet.

Step 7. Replace the write-protect tab on the FlashCalc program disk.

Note:

To save an alternate version of the configuration file, at step 4, insert the initialized data disk in one of the drives, and type its prefix (or its slot and drive number).

The Hardware option settings are not the only information saved in the configuration file. As described in Chapter 8 in the *Reference Guide*, the settings for the Print options and the Layout options are also saved in the file. If you change the program's initial settings for the print options, you may want to save the configuration file again, or save an alternate file that you can load before you print worksheets.

RELOADING THE PROGRAM

Note:

If you have an Apple II Plus and did not save a configuration file on the disk, SKIP to "If You Have an Apple II Plus."

Now that you have customized the program for your equipment, load the program in the following way each time from now on:

If you have only floppy drives:



Appendixes

Step 1. Insert the FlashCalc program disk in drive 1.

Step 2. Turn on the computer and the monitor.

Step 3. When the Startup screen appears, press **(RETURN)**. This loads the configuration file you just saved.

Note:

If you want to load an alternate configuration file, type the prefix or the slot and drive number of the disk on which you saved that alternate file before you press **(RETURN)** in step 3.

If you installed the program on the ProFile:

Step 1. Turn on the hard disk and wait for the ready light to come on continuously.

Step 2. If you transferred ProDOS to the ProFile, make sure there is no disk in drive 1. Then turn on the monitor and the computer, press **(CTRL)-(RESET)**, type **PR#5** and press **(RETURN)**.

If you didn't transfer ProDOS to the ProFile, insert the ProDOS User's Disk into drive 1, and turn on the monitor and the computer.

After a few seconds, the ProDOS Main Menu is displayed on your screen.

Step 3. Type **B** to enter Applesoft Basic.

Step 4. If you didn't transfer ProDOS to the ProFile, type **prefix/profile** and press **(RETURN)**.

Step 5. Type **-FC** and press **(RETURN)**.



Tailoring the Program to Your Computer

Step 6. When the Startup screen appears, press **(RETURN)**. This loads the configuration file you just saved.

Note:

If you want to load an alternate configuration file, type the prefix of the disk on which you saved that alternate file. before you press **(RETURN)** in step 6.

If you have an Apple //e, you have completed these instructions and are ready to start using the FlashCalc program. Now is a good time to take the *QuickStart Course* if you have not already done so.

IF YOU HAVE AN APPLE II PLUS

The remaining manuals in this package give you specific typing instructions from time to time. Some of the instructions include pressing **(↓)** or **(↑)** to move the cursor up and down. If you have an Apple II Plus, you have no **(↓)** or **(↑)** keys.

You have two choices:

- Use the space bar in combination with the **(←)** and **(→)** keys to move the cursor up and down.
- Use **(CTRL)** key combinations to move the cursor up and down.

These two choices are explained in the following sections.

Using the Space Bar

Look in the upper-right corner of the screen. It reads either CA- or CA!. The significance of the CA is described in the *QuickStart Course*. The - or ! indicate the direction in which the cursor will move when you press one of the arrow keys.



Appendixes

Press the space bar now. The - changes to ! (or vice versa). Press the space bar again. You can see that the space bar makes the symbol alternate from - to !.

When the - symbol is displayed, pressing the arrow keys moves the cursor horizontally. Conversely, when the ! symbol is displayed, pressing the arrow keys moves the cursor in a vertical direction on the worksheet.

If you want to change direction, just press the space bar to change the direction indicator. Experiment with moving the cursor in all directions.

So, when you are using the text and examples in the remaining manuals in this package, you can use the space bar in combination with the arrow keys. With a little practice, you will do this easily.

You can also move the cursor using the CTRL key combinations described below.

Using CTRL Key Combinations

To move the cursor up, hold down the **CTRL** key while you type **U** (**CTRL-U**). To move the cursor down, keep the **CTRL** key held down while you type **Z** (**CTRL-Z**).

You can move the cursor left or right no matter which way the direction indicator is set. To move the cursor left, press **CTRL-A**; to move the cursor right, press **CTRL-S**.

Practice moving the cursor with the CTRL key combinations and with the space bar combinations to find the method that you prefer.

Tabbing Forward and Backward

The *Reference Guide* demonstrates uses for the **TAB** and **OPEN APPLE-TAB** keys. Wherever the text says to press



(**TAB**), press (**CTRL**)-**I**. When the text says to press (**OPEN APPLE**)-(**TAB**), press (**CTRL**)-**Y**.

Moving the Cursor in the Menus

The FlashCalc program has several special menus: the Hardware, Storage, Printing, and Quit menus. You can see these menus by typing **/H**, **/S**, **/P**, and **/Q**, respectively.

Instructions on how to use each of these menus are included in *QuickStart Course* and in the *Reference Guide*. The instructions are based on the Apple //e keyboard and specify using the **↓** and **↑** keys to move the cursor up and down the list of options.

The program enables you to use the **→** and **←** keys to move the cursor up and down in this list. To move the cursor from the menu command line to the list, select the Options command. To move the cursor back up to the menu command line from the list of options, press (**ESC**).

Using the REPT Key

If you want to move the cursor quickly around the worksheet, you can use the (**REPT**) key in combination with the arrow keys. REPT key combinations work much like CTRL key combinations: just hold down the (**REPT**) key while you press the arrow key. Experiment with moving the cursor quickly up, down, left, and right. (Remember that you can use the space bar to change the direction indicator.)



Printing Lowercase Characters

Note:

This section and the next one, "Typing Special Characters with the One-Wire Shift Key Modification," explain specialized ways to enter characters on your Apple II Plus. These are details you can come back to after you have become familiar with the FlashCalc program.

If your Apple II Plus has no 80-column video card, you cannot display lowercase letters on your screen. But you can create lowercase letters in memory so that your printed worksheets will include lowercase letters.

To enter lowercase letters in the worksheet:

Step 1. Move the cursor to the cell you want to write in.

Step 2. Type any alphabetic character to begin label entry.

Step 3. Press **(ESC)** to erase the character. Notice the size of the blinking cursor.

Step 4. Press **(CTRL)-L**. The blinking cursor changes to a blinking underline. Press **(CTRL)-L** again. The blinking cursor is back to original size. You must type CTRL-L twice to change the cursor back to its original size.

Characters you type while the blinking cursor is large will be entered as uppercase letters. If the blinking underline is displayed, characters you type will be entered as lowercase letters.

Step 5. Experiment with entering uppercase and lowercase letters. Then print the worksheet (follow the instructions in Chapter 8) to see the results.



You have completed these instructions and are ready to start using the FlashCalc program. Now is a good time to take the *QuickStart Course* if you have not already done so.

Typing Special Characters with the One-Wire Shift Key Modification

Note:

This section explains specialized ways to enter characters on your Apple II Plus. These are details you can come back to after you have become familiar with the FlashCalc program.

If you have the one-wire shift key modification installed, you can enter some special characters in your worksheets. The most important character you can produce is the caret (^), which is necessary for you to be able to enter setup strings. (Refer to Chapter 8, Unit 6 for instructions on entering setup strings.)

There are other special characters you can enter. They are all produced by the **CTRL-B** combination. You type **CTRL-B** followed by a number to produce the characters listed below.

The character combinations you will use most often are **CTRL-B 2** to enter an at sign (@), and **CTRL-B 6** to enter a caret (^).

Certain characters are printed differently than they are displayed, as shown in Table 1.



Appendixes

Table 1. Entering Special Characters With CTRL-B

Press	Displayed Result	Printed Result
CTRL-B 1	< (less-than sign)	(vertical bar)
CTRL-B 2	@ (at sign)	(blank)
CTRL-B 3	(blank)	(blank)
CTRL-B 4	> (greater-than sign)	(tilde)
CTRL-B 5	\ (backslash)	\ (backslash)
CTRL-B 6	^ (caret)	^ (caret)
CTRL-B 7	' (apostrophe)	' (apostrophe)
CTRL-B 8	[(left bracket)	[(left bracket)
CTRL-B 9] (right bracket)] (right bracket)

USING A PROFILE™ HARD DISK

If you haven't yet used your hard disk, prepare it according to the instructions in the *ProFile™ Owner's Manual*. We suggest that you transfer ProDOS to your ProFile as described in that manual.

INSTALLING THE PROGRAM ON YOUR PROFILE™ HARD DISK DRIVE

This section includes directions for installing (copying) the FlashCalc™ program onto the ProFile™ hard disk drive. This is a simple procedure that saves you from having to insert the FlashCalc program disk each time you load the program.

Before you begin, you should decide if you want to install the FlashCalc program in its own directory on the ProFile. The advantage of installing in a directory is that all of your FlashCalc files will be kept separate from the other files you store on the ProFile. The *ProDOS User's Manual* explains the concept of a directory. Use the information in that manual to help you decide whether you want to make a directory for the FlashCalc program.

Now you are ready to install the program. You need to go through this procedure only once.

Step 1. Turn on the hard disk and wait for the ready light to come on continuously.

Step 2. If you transferred ProDOS to the ProFile, follow the procedure in the *ProFile Owner's Manual* to start up ProDOS from the ProFile. Briefly, the procedure is to turn on the monitor and the computer with no disk in drive 1. Then press **CTRL-RESET**, type **PR#5** and press **RETURN**.

If you didn't transfer ProDOS to the ProFile, insert the ProDOS User's Disk into drive 1, and turn on the monitor and the computer.

After a few seconds, the ProDOS Main menu is displayed on your screen.



Appendixes

Step 3. Skip to Step 4 if you don't want to put the FlashCalc program on its own directory on the ProFile. If you want to, use the ProDOS Make Directory command to make a directory for the FlashCalc program. The Make Directory command is described in the *ProDOS User's Manual*.

Note:

The remainder of this appendix assumes that you gave the main directory of your ProFile the name */PROFILE*. It also assumes that, if you make a subdirectory for the program, you will name it */FLASHCALC*. If you choose to use other names, substitute your names for the ones used in this appendix.

Briefly, to make the directory, type **F** to display the File Menu, then type **F** to display the File Commands Menu. (If you didn't transfer ProDOS to the ProFile, type **P** followed by **/PROFILE** **(RETURN)** to set the prefix to the ProFile; then press **(ESC)** to return to the File Commands Menu.) Type **M** followed by **FLASHCALC** **(RETURN)** to make the new directory. Press **(ESC)** to return to the File Commands Menu.

Now you need to return to the ProDOS Main Menu. (If you didn't transfer ProDOS to the ProFile, type **P** followed by **/USERS.DISK** **(RETURN)** to set the prefix back to the ProDOS User's Disk; then press **(ESC)** to return to the File Commands Menu.) To return to the Main Menu, press **(ESC)**, type **Q**, then press **(RETURN)**.

Step 4. Type **B** to enter Applesoft Basic. The left bracket with the flashing cursor (the Basic prompt) appears at the bottom of the screen.



Step 5. (If you didn't transfer ProDOS to the ProFile, remove the ProDOS User's Disk from drive 1.) Insert the FlashCalc program disk in drive 1. Type **/FLASHCALC/INSTALL** and press **RETURN**.

The Installation menu appears, as shown in Figure E-1.



Figure E-1. The Installation Menu

At the bottom of the screen, four commands are listed and explained, I (Install), C (Catalog), P (Prefix), and Q (Quit). The current prefix, **/FLASHCALC/** is listed in the middle of the screen.

Before you install, you need to change the current prefix to **/PROFILE/**; or if you made a directory for the program, you need to change the prefix to **/PROFILE/FLASHCALC/**.

Step 6. Type **P** to select the Prefix command. Type either **/PROFILE/**, or **/PROFILE/FLASHCALC/**, whichever is appropriate. Press **RETURN**. The Installation menu reappears with the new prefix listed.



Appendixes

Step 7. Type **I** to select the Install command. This command copies the FlashCalc program onto your ProFile. The disk drive whirs. After a few seconds, a message appears telling you the installation was successful. Press **(RETURN)**. The Installation menu reappears.

Step 8. Type **C** to select the Catalog command. This command displays the names of the files in the current directory so that you can verify that the program was actually copied. Two files should be in the directory: FC.SYSTEM and FC.PROG. Press **(RETURN)** to display the Installation menu again.

Step 9. Type **Q** to select the Quit command. This returns you to the Basic prompt.

Congratulations, you installed the FlashCalc program on your ProFile. Now store the FlashCalc program disk in a safe place. Should your ProFile ever become erased, you will need to use the program disk to reinstall the FlashCalc program.

LOADING THE PROGRAM FROM THE PROFILE™ HARD DISK DRIVE

Follow this procedure each time you load the program from now on. If you are continuing directly from the last section, you can start with Step 5.

Step 1. Turn on the hard disk and wait for the ready light to come on continuously.

Step 2. If you transferred ProDOS to the ProFile, make sure drive 1 is empty. Then turn on the monitor and the computer, press **(CTRL)-(RESET)**, type **PR#5**, and press **(RETURN)**.

If you didn't transfer ProDOS to the ProFile, insert the ProDOS User's Disk into drive 1, and turn on the monitor and the computer.

After a few seconds, the ProDOS Main Menu is displayed on your screen.



Step 3. Type **B** to enter Applesoft Basic.

Step 4. If you didn't transfer ProDOS to the ProFile, type **prefix/profile** and press **(RETURN)**.

Step 5. Type **-FC** and press **(RETURN)**. This command takes you to the FlashCalc directory (if you made one) and begins running the program.

After a few seconds, the FlashCalc startup screen appears, as shown in Figure E-2.

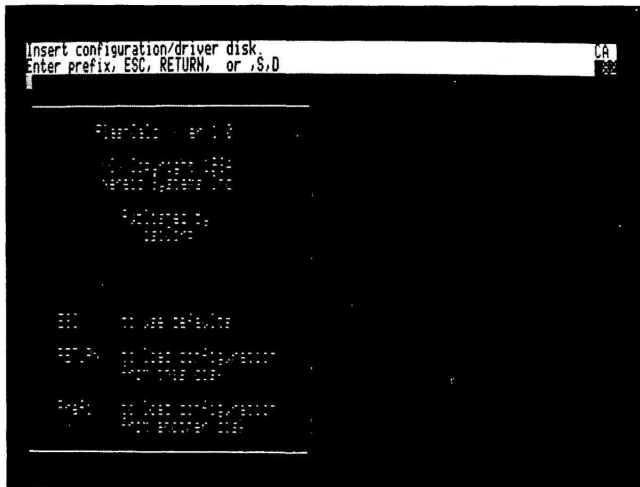


Figure E-2. The FlashCalc™ Startup Screen

If your computer does not have an 80-column video card, your screen will always show only 40-columns (40 characters per line) on the screen. Therefore, your screen will look like the left half of all of the screen illustrations in these manuals. If your computer displays only uppercase letters, your screen will differ from the illustrations in that regard also.



Appendixes

Note:

If you have an 80-column video card (other than the Apple //e 80-Column Text Card) installed in your computer, your screen displays only 40 columns at this point. Don't worry. Directions for displaying 80 columns in your special case are included in Appendix D, "Tailoring The Program to your Computer." For now, just continue with the instructions in this appendix.

The second line from the top of the screen lists what you can type to proceed. ESC, RETURN, and Prefix are listed at the bottom of the screen with explanations of their functions. You don't need to be concerned with these functions now. They are important to you only if you have special equipment installed in your computer. These functions are explained in Appendix D, "Tailoring the Program to Your Computer."

Step 6. Press **(ESC)**. The screen should look like Figure E-3.

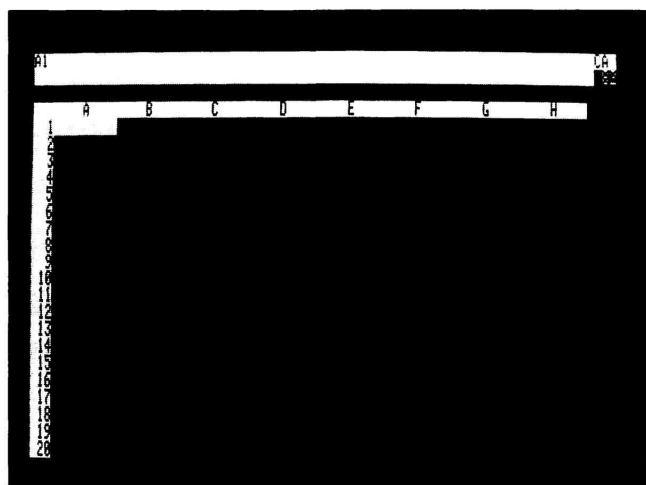


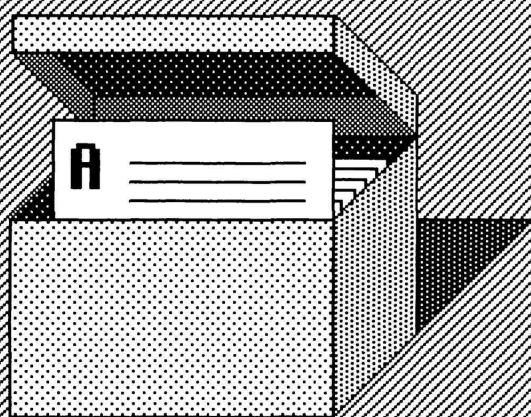
Figure E-3. The FlashCalc™ Worksheet



Using a Profile™ Hard Disk

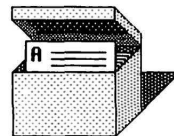
This is a blank worksheet screen. The *QuickStart Course* explains all of the symbols displayed on this screen. You could go on to that manual now, or use the instructions in Appendix D, "Tailoring the Program to Your Computer" if you need to.





Index



**Special Characters**

! (exclamation point)
evaluate formula, 2-15
recalculate worksheet,
1-5

% (percent sign),

= (equal sign), 9-31

> (greater than sign),
2-10, 9-31
Go To key, 1-10 to
1-11, 3-19

< (less than sign), 2-10,
9-31

> = (greater than or equal
to), 9-31

< = (less than or equal to),
9-31

< > (not equal to), 9-31

" (quotation mark), 2-3

(crosshatch)
displaying formula's
value on edit line,
2-7, 2-15

\$ (dollar sign), 6-8, 6-11

((left parenthesis), 9-7
options of Replicate
command, 5-19

) (right parenthesis), 9-7
options of the
Replicate command,
5-19

; (semicolon), 6-13, 6-20

@ (at sign), 9-5

/ (slash)
commands, 1-7
division operator, 2-6,
2-12
in the prefix, 7-10

* (asterisk)
multiplication
operator, 2-6, 2-12
graph format, 6-8, 6-12

+ (plus sign), 2-6, 2-12

- (minus sign), 2-6, 2-12

. (period or decimal
point), 2-6, 2-10
displaying, 6-8, 6-9

^ (caret), 8-22

, (comma), 6-13, 6-14,
6-20, 9-6
,S,D, 7-9

@ABS, 9-8

@AND, 9-30, 9-32

@AVERAGE, 9-8, 9-10

@CHOOSE, 9-22

@COL, 9-22, 9-24

@COS, 9-8, 9-11

@COUNT, 9-8, 9-12

@ERROR, 9-22, 9-25

@EXP, 9-8, 9-13

@FALSE, 9-30, 9-33

@FV, 9-41, 9-43

@IF, 9-30, 9-34

@INT, 9-8, 9-13

@IRR, 9-41, 9-45

@ISERROR, 9-30, 9-36

@ISNA, 9-30, 9-37

@LN, 9-8, 9-14

@LOG10, 9-8, 9-14

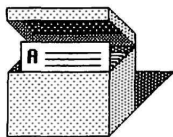
@LOOKUP, 9-22, 9-26

@MAX, 9-8, 9-15

@MIN, 9-8, 9-16

@NA, 9-22, 9-28

@NOT, 9-30, 9-38



Index

@NPV, 9-41, 9-46
@OR, 9-30, 9-39
@PERIODS, 9-41, 9-48
@PI, 9-8, 9-17
@PMT, 9-41, 9-49
@PV, 9-41, 9-50
@RATE, 9-41, 9-51
@ROUND, 9-8, 9-17
@ROW, 9-22, 9-28
@SIN, 9-8, 9-19
@SQRT, 9-8, 9-19
@SUM, 9-8, 9-20
@TAN, 9-8, 9-21
@TRUE, 9-30, 9-40

A

Absolute Value function —
 @ABS, 9-8
Accounting
 textbooks, 9-43
Accuracy of values, 2-8 to 2-9
Adding values, 9-20
Adding space for a new row or
 column, 4-3
Aligning cell entries right or
 left, 6-10 to 6-11
Alignment, 6-10 to 6-11
And function — @AND, 9-30,
 9-32
Apple II Plus hardware, D-1 to
 D-22
Apple //e hardware, D-1 to
 D-22
Arguments, 9-5 to 9-6
Arithmetic operators, 2-6, 2-12
Arrow keys, 1-10, 2-3
Attribute command — /A, 6-13
 to 6-20
Attributes option — /GA, 3-3,
 3-5

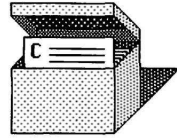
Automatic recalculation, 3-12
 recalculate worksheet, 3-8 to
 3-11, 3-12
Average function
 — @AVERAGE, 9-8, 9-10
Avoiding forward references,
 3-9 to 3-11

B

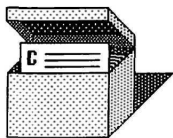
Backup disks, 7-33
Backup files, 7-33
BIN files, 7-29
Blank command — /B, 2-22 to
 2-23
Block, copying a, 5-13
Both option — /TB,

C

Calc command, 7-5, 8-5
Calculating
 an average, 9-10
 future value of an
 investment, 9-43
 interest rates (@RATE), 9-51
 formulas on the edit line,
 2-15 to 2-16
Calculating a worksheet
 mode of calculating, 1-5
 order of calculating, 1-4 to
 1-5
Catalog command, 7-29
Cell
 alignment, 6-10 to 6-11
 blanking or erasing, 2-22 to
 2-23
 copying, 5-6
 displays, 6-13 to 6-20
 formats, 6-3 to 6-12
 going directly to, 1-10 to
 1-11

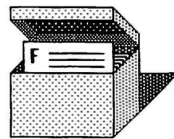


- hiding, 6-13, 6-15, 6-19 to 6-20
- protecting, 6-13, 6-15, 6-19
- Cell contents, 5-19
- Cell coordinates, 1-9
- Centering labels, 6-8, 6-11
- Changing a cell's contents, 2-19 to 2-21
- Changing columns to rows, 7-26
- Changing the order of recalculation, 3-8
- Changing the typeface, 8-21
- Changing the width of all columns, 3-3, 3-4, 3-6 to 3-7
- Changing the width of one column, 3-7
- Choose function — @CHOOSE, 9-22
- Circular references, 3-11, 5-18
- Clear command — /C, 3-13
- Column function — @COL, 9-22, 9-24
- Column width — /GC, 3-3 to 3-7
- Columns, 1-8
 - changing width of all, 3-3, 3-4, 3-6 to 3-7
 - changing width of one, 3-7
 - copying, 5-9
 - deleting, 4-6
 - inserting, 4-3
 - moving, 4-9
 - recalculation, 3-8 to 3-11, 3-12
 - replicating, 5-9
- Comma (,), 6-13, 6-14, 6-20, 9-6
- Commands
 - Attribute, 3-3 to 3-5, 6-13 to 6-20
 - Blank, 2-22 to 2-23
 - Clear, 3-13
 - Delete, 4-6
 - Edit, 2-19 to 2-21
 - Format, 3-3 to 3-5, 6-3 to 6-12
 - Global, 3-3 to 3-12
 - Hardware, D-1 to D-15
 - Insert, 4-3
 - Move, 4-9
 - Print, 8-8
 - Repeating Label, 2-17 to 2-18
 - Replicate, 5-3
 - Storage, 7-3
 - Titles, 3-18 to 3-19
 - Version, 1-12
 - Window, 3-15 to 3-17
- Command line, 1-7
- Command summary, see *Using the Reference Guide* at beginning of manual, xx to xxiii
- Comparing Values (>, <, =, <>, <=, >=), 9-31
- Comparison symbols, 9-31
- Condensed type, 8-21
- Condition statements, 9-31
- Consolidating Worksheets, 7-19
- Continuation disk, 7-16
- Continuous paper, 8-13
- Control codes, printing, 8-21



Index

- Control keys,
 - CTRL-C, 2-16, 2-20, 7-12
 - CTRL-E, 2-19, 2-20, 7-11
 - CTRL-T, 2-20, 7-11
- Controlling the entry mode of a cell
 - entering labels only, 6-16 to 6-17
 - entering values only, 6-16 to 6-17
- Converting worksheets, A-4 to A-6
- Copying
 - attributes only, 5-19
 - a block of cells, 5-13
 - cell contents only, 5-19
 - a column, 5-9
 - data to another worksheet, 7-21
 - a disk, 7-33
 - a file, 7-33
 - formats only, 5-19
 - a rectangular area, 5-13
 - relative values, 5-16, 5-19
 - a row, 5-9
 - a single cell, 5-6
 - values and labels only, 5-19
 - values using #, 2-7
 - with no change, 5-16, 5-19
- Correcting mistakes, 2-5, 2-19 to 2-20
- Cosine function — @COS, 9-8, 9-11
- Count function — @COUNT, 9-8, 9-12
- Creating a print file, 8-25
- Cursor, 1-4
 - moving, 1-10 to 1-11
- D
 - Data disk, 7-30
 - Decimal places
 - displaying, 6-11
 - rounding to, 9-17
 - separating with commas, 6-13, 6-14, 6-20
 - Decimal point, 6-11
 - Default Format — /FD, 6-6, 6-7, 6-9 to 6-10
 - Default Option — /AD, 6-13, 6-14, 6-16
 - Delete command — /D, 4-6
 - Delete command (Utilities menu), 7-32
 - Deleting
 - a file, 7-32
 - a row or column, 4-6
 - Detecting Errors (@ERROR), 9-25
 - DIF™, 7-21
 - DIF™ file
 - saving, 7-21
 - loading, 7-23
 - printing, 8-23
 - DIF™ Order option, 7-26, 8-24
 - Discount rate (financial functions), 9-41
 - Disk command, 8-25
 - Disk drives, 7-8
 - Disk
 - copying, 7-33
 - preparing for data storage, 7-30
 - Displaying
 - asterisks (graph format), 6-6, 6-8, 6-12
 - formulas, 6-15, 6-17 to 6-18

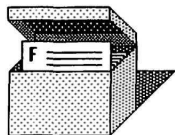


labels, 6-13, 6-14, 6-17
values, 6-13, 6-14, 6-17
values larger than column
width, 2-7
Displaying file names, 7-29
Displaying the formulas of the
worksheet, 6-15, 6-17 to 6-18
Dollar sign (\$), 6-8, 6-11
Dollars-and-Cents
Format — /F\$, 6-8, 6-11
Drawing Bar Graphs, 6-6, 6-8,
6-12
Drawing lines, 2-17 to 2-18
Drive number, 7-9
Double-spaced printing, 8-13
Duplicating
cell entries, 5-3
files, 7-33

E
Edit command — /E, 2-19 to
2-21
Edit line, 1-4
as a calculator, 2-15
Editing,
a file name, 7-11
a value or label, 2-19 to 2-21
while typing on the edit line
(CTRL-E), 2-20
Eighty-column text cards, D-2,
D-10 to D-13
Enter lower right or
(RETURN), 7-14, 8-8, 8-10
Entry line, 1-4
EOD displayed in cell, 7-19
Erasing the entire worksheet,
3-13
Erasing
an entry, 2-22 to 2-23
a row or column, 4-6

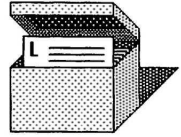
ERROR
displayed in cell, 4-6, 5-18
illegal formula, 2-11
Error function — @ERROR,
9-22, 9-25
Error messages, C-1
ESC key, 2-5, 2-20, 7-7, 8-7
Examples of printing with
setup strings, 8-22
Exiting the Program — /Q, 1-13
to 1-14
Exponential Value function —
@EXP, 9-8, 9-13
Expression Format
Option — /AE, 6-15, 6-17 to
6-18
Expressions
displaying on screen, 6-15,
6-17 to 6-18
printing, 8-23

F
False function — @FALSE,
9-30, 9-33
File, 7-11
File format option, 7-22, 8-24
File name, 7-11
File names
creating, 7-14
editing, 7-11
rules, 7-11
seeing the list of, 7-29
Financial Functions, 9-41
Format a disk, 7-30
Format command — /F, 6-6 to
6-12
Format option — /GF, 3-3 to
3-5



Index

- Formats
 - default, 6-6, 6-7, 6-9 to 6-10
 - dollars-and-cents, 6-8, 6-11
 - General (startup), 6-3
 - Global, 3-3 to 3-5
 - graph, 6-6, 6-8, 6-12
 - integer, 6-6, 6-8, 6-10
 - left-aligned, 6-6, 6-8, 6-10
 - Local, 6-3 to 6-4
 - right-aligned, 6-6, 6-8, 6-11
- Formatting integers and dollars-and-cents, 6-6, 6-8, 6-10
- Formatting left and right, 6-6, 6-8, 6-10
- Formulas
 - calculation of, 2-13 to 2-14
 - copied with No change, 5-16
 - copied Relative to new location, 5-16
 - displaying on screen, 6-15, 6-17 to 6-18
 - entering, 2-10 to 2-16
 - maximum length, 2-13
 - order of calculation, 3-8
 - printing, 8-23
 - referencing other cells, 3-9 to 3-11
- Formulas command, 8-23
- Formulas and recalculations, 3-9 to 3-11
- Formulas used to calculate the financial functions, 9-43, B-1 to B-3
- Forward references, 3-9 to 3-11, 5-18
- Functions
 - Absolute Value (@ABS), 9-8
 - And (@AND), 9-30, 9-32
 - Average (@AVERAGE), 9-8, 9-10
 - Choose (@CHOOSE), 9-22
 - Column, (@COL), 9-22, 9-24
 - Cosine (@COS), 9-8, 9-11
 - Count (@COUNT), 9-8, 9-12
 - Error (@ERROR), 9-22, 9-25
 - Exponential Value (@EXP), 9-8, 9-13
 - False (@FALSE), 9-30, 9-33
 - Future Value (@FV), 9-41, 9-43
 - If (@IF), 9-30, 9-34
 - Integer Value (@INT), 9-8, 9-13
 - Internal Rate of Return (@IRR), 9-41, 9-45
 - Interest Rate (@RATE), 9-41, 9-51
 - Is Error (@ISERROR), 9-30, 9-36
 - Is Not Available (@ISNA), 9-30, 9-37
 - Logarithm Base 10 (@LOG10), 9-8, 9-14
 - Lookup (@LOOKUP), 9-22, 9-26
 - Maximum Value (@MAX), 9-8, 9-15
 - Minimum Value (@MIN), 9-8, 9-16
 - Natural Logarithm (@LN), 9-8, 9-14
 - Net Present Value (@NPV), 9-41, 9-46
 - Not (@NOT), 9-30, 9-38
 - Not Available (@NA), 9-22, 9-28



Index

Number of Periods
 (@PERIODS), 9-41, 9-48
Or (@OR), 9-30, 9-39
Payment (@PMT), 9-41,
 9-49
Pi (@PI), 9-8, 9-17
Present Value (@PV), 9-41,
 9-50
Rounded Value
 (@ROUND), 9-8, 9-17
Row (@ROW), 9-22, 9-28
Sine (@SIN), 9-8, 9-19
Square Root (@SQRT), 9-8,
 9-19
Sum (@SUM), 9-8, 9-20
Tangent (@TAN), 9-8, 9-21
True (@TRUE), 9-30, 9-14
Future Value function — @FV,
 9-41, 9-43

G

General (Startup) Format, 6-3
General Format option — /FG,
 6-6, 6-7, 6-9
Global
 attribute settings, 3-5
 formats, 3-4 to 3-5
Global Command — /G, 3-3 to
 3-12
Go To key, 1-10 to 1-11
Going directly to a cell, 1-10
 to 1-11
Graph Format — /F*, 6-6, 6-8,
 6-12

H

Hide Option — /AH, 6-13,
 6-15, 6-19 to 6-20
Hiding an Entry, 6-13, 6-15,
 6-19 to 6-20

Horizontal Option
 (titles) — /TH, 3-14 to 3-17
Horizontal Option
 (windows) — /WH, 3-18 to
 3-19

I

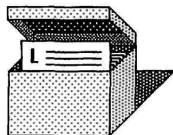
If function — @IF, 9-30, 9-34
Indicating when values are not
 available (@NA), 9-22, 9-28
Init command (Utilities menu),
 7-30
Initialize a disk, 7-30
Insert command — /I, 4-3
Inserting a row or column, 4-3
Integer Format — /FI, 6-6, 6-8,
 6-10
Integer Value function —
 @INT, 9-8, 9-13
Integrating worksheets
 (consolidating worksheets),
 7-19
Interest rate (financial
 functions), 9-41
Interest Rate function —
 @RATE, 9-41, 9-51
Internal Rate of Return
 function — @IRR, 9-41, 9-45
Is Error function —
 @ISERROR, 9-30, 9-36
Is Not Available function—
 @ISNA, 9-30, 9-37

J

Justification, *see* alignment

L

Label option — /AL, 6-13, 6-14,
 6-17

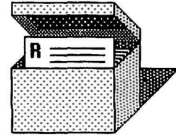


Index

Labels,
 entering, 2-3 to 2-5
 entering labels only, 6-17
 longer than column width,
 2-4
Large worksheets, printing,
 8-15
Layout command, 8-16
Layout menu, 8-6
Leaving the program, 1-13 to
 1-14
Left-aligned format — /FL, 6-6,
 6-8, 6-10
Left alignment in cell, 6-6, 6-8,
 6-10
Left margin option, 8-18
Limit options, Replicate
 command, 5-19
Line spacing, 8-13
Listing files on disk, 7-29
Loading
 a DIF™ file, 7-23
 a worksheet, 7-18
Local settings, 6-3 to 6-4
Lock command, 7-27
Logarithm Base 10 function —
 @LOG10, 9-8, 9-14
Logic functions, 9-30
Looking up values in a table
 (@LOOKUP), 9-22, 9-26
Lookup function —
 @LOOKUP, 9-22, 9-26
Lookup tables, 9-26
Lower Right option, 7-22, 8-10
Lower-right limit of a
 worksheet, 8-11
Lowercase characters, D-1, D-7
 to D-8

M
Making backup copies, 7-33
Manual recalculation, 3-12
Mathematical functions, 9-8
Maximum value function —
 @MAX, 9-8, 9-15
Memory Indicator, 1-5 to 1-6,
 4-7
Menu
 Hardware, D-1 to D-15
 Print, 8-5
 Layout, 8-6, 8-16
 Storage, 7-4
 Utilities, 7-6
Merging worksheets
 (consolidating worksheets),
 7-19
Minimum value function —
 @MIN, 9-8, 9-16
Move command — /M, 4-9
Moving the cursor, 1-10 to
 1-11
Moving a row or column, 4-9

N
Naming files, 7-11
Natural Logarithm function —
 @LN, 9-8, 9-14
Net Present Value function —
 @NPV, 9-41, 9-46
No change option — /R(N, 5-19
None option — /TN, 3-19
Normal recalculation, 3-8
Not Available function —
 @NA, 9-22, 9-28
Not function — @NOT, 9-30,
 9-38
Notation, scientific, 2-8



Number of Periods function —
@PERIODS, 9-41, 9-48

O

One Window Option — /W1,
3-14, 3-17

Options—see Commands

Options command, 7-5, 8-5,
8-6

Options of the Replicate
command, 5-19

Or function — @OR, 9-30,
9-39

Order of calculation in
formulas, 2-13 to 2-14

Order of Recalculation
Option — /GO, 3-8
column, 3-8
row, 3-8

Overlaying worksheets, 7-19

Overprinting, 8-9

P

Page Eject option, 8-14

Paginating, 8-15

Paper Feed option, 8-13

Paper Length option, 8-19

Paper Width option, 8-17

Parentheses

in formulas, 2-13

in functions, 9-7

options of Replicate
command, 5-19

Payment Amount function —
@PMT, 9-41, 9-49

Pi function — @PI, 9-8, 9-17

Pointing the cursor to another
cell, 1-14

Position paper, 8-8

Precision of Values, 2-8 to 2-9

Prefix

entering, 7-8

editing, 7-11

Preparing data disks, 7-30

Present Value function —

@PV, 9-41, 9-50

Print command, 8-8

Print files, 8-25

Print menu, 8-5

Printer

controlling the, 8-10, 8-16

doesn't print, 8-9

printing to a slot number,
D-9

Printing cell formats,

attributes, and formulas, 8-23

Printing in condensed type,
8-22

Printing large worksheets, 8-15

Printing a worksheet, 8-8

Profile hard disk, E-1 to E-7

Prompt line, 1-4

Protecting Cells Against

Change, 6-19, 6-20

Protecting your work, 7-33

Protecting files, 7-27

Q

Quit command — /Q, 1-13 to
1-14

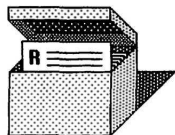
R

Raising *e* to a Power (@EXP),
9-8, 9-13

Range

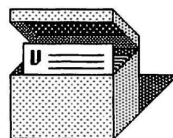
source, 5-4

target, 5-4



Index

- Recalculation Order, 3-8
 - changing the, 3-8
 - column, 3-8
 - row, 3-8
- Recalculation Indicator
 - mode of, 1-5
 - order of, 1-4 to 1-5
- References, circular, 3-11, 5-18
- References, forward, 3-9 to 3-10, 5-18
- References to other cells, 2-6, 2-14 to 2-15
- Relative option — /R(R, 5-19
- Repeating Label
 - Command — /--, 2-17 to 2-18
- Replicate command — /R, 5-3
 - options, 5-19
- Replicating
 - attribute, 5-19
 - cell contents, 5-19
 - block, 5-13
 - column, 5-9
 - format, 5-19
 - formulas, 5-16
 - rectangle, 5-13
 - row, 5-13
 - values, 5-19
- Replicating references to other cells, 5-16
 - all with No change, 5-19
 - all Relative to new location, 5-19
- Resetting a cell to the General (startup) format, 6-6, 6-7, 6-9 to 6-10
- Resetting a cell to the Global default setting, 6-6, 6-7, 6-9
- RETURN key, 1-4, 2-3
- Right-aligned format — /FR, 6-6, 6-8, 6-10
- Right alignment in cell, 6-6, 6-8, 6-11
- Rounding values
 - displaying as whole numbers — /FI, 6-6, 6-8, 6-10
 - to two decimal places — /F\$, 6-8, 6-11
- Rounded Value function — @ROUND, 9-8, 9-17
- Row function — @ROW, 9-22, 9-28
- Rows
 - copying, 5-9
 - deleting, 4-6
 - inserting, 4-3
 - moving, 4-9
 - recalculation, 3-8
 - replicating, 5-9
- Rules for naming files, 7-11
- S**
- Save command (Storage menu), 7-14
- Save Hardware Configuration file, D-13 to D-15
- Saving a worksheet, 7-13
 - to a disk, 7-13
 - as a DIF™ File, 7-21
 - as a print file, 8-25
- Scientific notation, 2-8
- Scrolling, 1-9, 1-10
- Scrolling the window, 3-15
- Selecting menu commands, 7-7, 8-7
- Selecting values from a list (@CHOOSE), 9-22
- Sending setup characters to the printer, 8-21
- Sending setup strings, 8-21



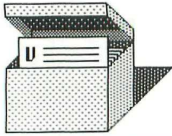
- Setting
 attributes, 3-5, 6-13 to 6-20
 formats, 3-3 to 3-5, 6-3 to 6-12
Setting a local format, 6-4
Setting manual recalculation, 3-12
Setting up conditions
 (@AND, @NOT, @OR), 9-31, 9-32
Setup string, 8-21
SHIFT key, D-8 to D-9
Sine function — @SIN, 9-8, 9-19
Single Column Width — /GCC, 3-7
Source range, 5-4
Spanning more than one data disk, 7-15
Special-purpose functions, 9-22
Specifying other cells in a formula, 2-6, 2-14 to 2-15
Splitting the screen, 3-14 to 3-17
Square Root function — @SQRT, 9-8, 9-19
Startup settings, 6-3
Status area, 1-3 to 1-6
Stopping the printer — (ESC), 8-9
Storage command (Utilities menu), 7-6
Storage menu — /S, 7-4
Storing worksheets, 7-3
Subdirectories, 7-10
Sum function — @SUM, 9-8, 9-20
Symbols used in formulas, 2-12 to 2-13

Synchronized Scrolling
 option — /WS, 3-15 to 3-17

T
Tangent function — @TAN, 9-8, 9-21
Target range, 5-4
Text Length option, 8-19
Text Width option, 8-18
Titles Command — /T, 3-18 to 3-19
 fixing titles in place, 3-18 to 3-19
Top Margin option, 8-19
Transferring data between worksheets with DIFTM, 7-21
True function — @TRUE, 9-30, 9-40
TXT files, 7-29
Type-checking functions, 6-16 to 6-17
Typefaces used in manual, xvii

U
Unlock command, 7-27
Unsynchronized Scrolling
 Option — /WU, 3-15 to 3-17
Upper Left option, 7-22, 8-10
Using the cursor to refer to cells, 2-6, 2-14 to 2-15
Utilities menu, 7-6

V
Valid formula, 2-10, 2-13
Valid label, 2-3
Valid value, 2-6
Value option — /AV, 6-13, 6-14, 6-17



Index

Values,

- accuracy of, 2-8 to 2-9
- copying, 2-7
- entering, 2-6 to 2-9
- entering values only, 6-14, 6-17

Version command—/V, 1-12

Vertical option (Titles command)—/TV, 3-18 to 3-19

Vertical option (Window command)—/WV, 3-15 to 3-17

Video display case, D-6 to D-7

Video slot number, D-10

Video driver, D-11 to D-13

Volume name, 7-8, 7-30

W

Width, column, 3-6 to 3-7

Window command—/W, 3-14 to 3-17

- horizontal windows, 3-14 to 3-17

- vertical windows, 3-14 to 3-17

Worksheet

- calculating, 1-4 to 1-5

- loading, 7-18

- printing, 8-8

- saving, 7-13

- screen display, 1-8 to 1-9

- size, 1-9

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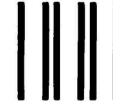
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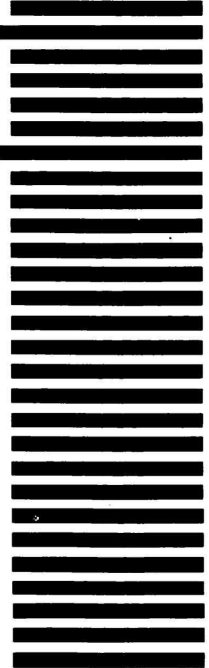
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